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Factors affecting the adoption of online banking in Poland☆

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ABSTRACT

Electronic banking, including online banking, is a necessary condition for the development of e-business and e-society. The aim of the article is to identify the factors exerting an influence on the use of online banking in Poland. A "Social Diagnosis" research project, which the Board of Social Monitoring operating at the University of Finance and Management in Warsaw carried out in 2015, serves as the source of empirical material for the purposes of the present article. Linear regression analysis demonstrates that the factors which mostly determine the employment of online banking are: the use of the Internet, taking advantage of other banking products as well as trust in commercial banks. The banking products that have the biggest influence on the use of online banking are mortgages and credit cards.

1. Introduction

Internet banking is the equivalent of accessing a bank's services via the Internet. Internet banking does not exist single-handedly but as a part of electronic banking (Gospodarowicz, 2005, p. 28). Researchers use the terms Internet banking and online banking interchangeably. Internet banking is "a new type of information system that uses emerging techniques such as the Internet and the World Wide Web, and has changed how customers perform various financial activities in virtual space" (Shih & Fang, 2006, p. 62). Internet banking is a manifestation of both product and process-related innovation (DeYoung, Lang, & Nolle, 2007). In Poland, the proportion of citizens using Internet banking is 33% in 2014. In the same year, in 28 European Union Member States, the percentage of people using Internet banking is 44% (Eurostat, 2015). In June 2015, over 27 million users in Poland have an agreement on the use of Internet banking, whereas the number of active individual customers who use Internet banking amounts to over 13.5 million (Związek Banków Polskich, 2015).

The review of world literature contains a discussion on several variables that affect the use of online banking. Extensive and comprehensive research on the use of online banking does not exist in Poland. Previous research on the determinants of the use of online banking does not provide clear answers either. In addition, different researchers focus on studying different variables. As shown above, the use of online banking in Poland ranks low among European Union countries. In Poland, an attractive group of people who do not use bank services may still become potential bank customers.

The aim of this article is to verify and quantify the variables that determine the use of online banking by Poles. These studies provide valuable information to people in banks responsible for marketing and show which groups to direct an online banking offer to. The article examines the users of banking products who are most likely to use online banking and verifies if confidence in commercial banks affects the tendency to use online banking.

Wider use of electronic banking services has a good influence on the economy. Lower prices of services that are part of electronic banking in relation to services available via traditional distribution channels, especially for payment transactions, result from automation of the processes of service provision and customer self-service. Furthermore, the speed and the safety of financial transactions are greater, which certainly contributes to the improvement of the functioning of the whole economy (Polasik, 2013). Electronic banks allow for the rapid flow of money that is necessary for the functioning of the digital economy. The question whether the development of online banking is actually positive for banks appears in the literature. Onay and Ozsoz (2012) claim that adoption of Internet banking produces a negative impact on bank profitability 2 years following the adoption as Internet banking increases competition and results in lower interest income, whereas Arnold and Ewijk (2011) highlight the danger for virtual banks. Lower costs of operation that results from the lack of own offices allow virtual banks to offer higher interest on deposits than traditional banks. The researchers emphasize that individuals sensitive to the level of interest rates and looking for attractive interest rates on deposits can quickly and easily open deposits in such banks. Such people often withdraw the deposits as soon as a more attractive offer appears.

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2. Literature overview

Online social networks have a substantial influence on decisions about the use of new technologies (Katona, Zubcsek, & Sarvary, 2011; Peng & Mu, 2011). Ratchford and Barnhart (2012) isolate four distinct dimensions of consumers' propensity to adopt technology: dependence, vulnerability, optimism, and proficiency. Cavusoglu, Hu, Li, and Ma (2010) suggest the diffusion model of an IT innovation comprising three groups of actors: influentials, imitators, and opponents. These authors demonstrate that opponents play a crucial role in determining the diffusion path of an innovation.

The factors stimulating banks to implement and develop Internet banking services are competition with other banks (Bradley & Steward, 2003; Hernández-Murillo, Llobet, & Fuentes, 2010), customers' demand for services, and availability of the technology (Bradley & Steward, 2003).

An important factor exerting influence on the diffusion of online banking and on the access to the Internet in various groups of countries is the national culture (Takieddine & Sun, 2015). Due to cultural differences, consumers all over the world face various Internet banking adoption patterns (Yuen, 2013; Yuen, Yeow, & Lim, 2015).

Adoption of technology by consumers depends on an array of demographic variables and the manner of perception of technology (Table 1). The most common qualitative factors present in the relevant literature are perceived usefulness of online banking, perceived ease of use, and trust, whereas the quantitative factors are education, access to infrastructure, income, age, and sex.

According to Angelakopoulos and Mihiotis (2011), one of the factors exerting a negative influence on the use of online banking is a low proportion of Internet users and the lack of familiarity with technologically advanced devices. Various authors name this problem differently. Nasri (2011) talks about Internet knowledge. Whereas Polasik and Wiśniewski (2009) discuss familiarity with the Internet, and Pikkarainen, Pikkarainen, Karjaluoto, and Pahnila (2004) refer to this factor as the amount of information about online banking.

According to Yiu, Grant, and Edgar (2007), the factor influencing the commencement of the use of online banking by consumers is personal innovativeness—the degree to which an individual is more or less receptive to adopt new ideas than the other members of a system.

Attitude toward finance in general is also a factor affecting the use of online banking (Guerro, Egea, & Gonzales, 2007). Trust in a bank that the user gains in the course of using bank services via the traditional channel is one of the factors determining the commencement of the use of Internet banking as well (Flavián, Guinaliu, & Torres, 2006; Lee, Tsai, & Lanting, 2011; Montazemi & Qahri-Saremi, 2015; Yap, Wong, Loh, & Bak, 2010). Yang, Lu, and Chau (2013) show that consumers' experiences in terms of the use of the offline channel produce impact on their intentions concerning the use of the online channel, however, this impact may be two-way. On the one hand, if the consumer has a positive experience in using the offline channel, he will also perceive the corresponding online channel positively, which impacts on his intentions concerning the use of the online channel. On the other hand, a client satisfied with the offline channel may not see the potential benefits arising from the use of the online channel, despite having a positive opinion of this channel. Consequently such a client will not be interested in transitioning to online services.

3. Methodology

A research project "Social Diagnosis," which the Board of Social Monitoring operating at the University of Finance and Management in Warsaw carried out in 2015, served to obtain the empirical material for the purposes of the present study. Professional interviewers from the Central Statistical Office (GUS) collected data in March and April 2015.

The project takes into account all the significant aspects of the life of Polish individual households and their members, both the economic ones (i.e., income, material wealth, savings, and financing) and the not strictly economic ones (i.e., education, medical care, problem solving, stress, psychological well-being, lifestyle, pathologies, engagement in the arts and cultural events, use of new communication technologies, and many others). The analyses only make use of responses to selected questions concerning usage of financial services.

The number of households that undergo analysis amounts to 26,766, and the number of household members is 84,478. Analysis of the factors determining the use of online banking makes use of a selection of variables such as the age of the respondents, their educational status, trust in bank services, the use of the Internet, monthly net income, and possession of other bank products.

Estimations do not take into account data of the respondents who have not answered all the questions under examination. Analysis covers 8663 respondents, 2787 of whom use Internet banking, which constitutes 32.2% of all the respondents under examination. The age of 6.9% of the respondents is up to 24, and 16.9% of them are between 25 and 34 years old. People between 35 and 44 years old constitute 18.7% of the respondents. The most numerous group comprises people between 45 and 59 years old (29.0% of the respondents). People who are 60–64 constitute 10.1%, and those over 65 years old constitute 18.4% of the respondents. The respondents with elementary education and lower form 9.5% of the group. The respondents with secondary vocational education and graduates of junior high school comprise 26.7%, and those who hold secondary education comprise 34.6%, whereas people with higher and post-secondary education comprise 29.2% of the respondents. The monthly average net income of the group under examination is PLN 1962.72. The mode of income is PLN 2000, and the median is PLN 1600. Commercial banks enjoy great trust of 6.1% of the respondents,

Table 1
Chosen factors affecting adoption of online banking.

Factors affecting adoption of online banking	Authors
Perceived usefulness	Eriksson & Nilsson, 2007; Lee, Tsai, & Lanting, 2011; Montazemi & Qahri-Saremi, 2015; Pikkarainen, Pikkarainen, Karjaluoto, & Pahnila, 2004; Santouridisa & Kyritsi, 2014; Yiu, Grant, & Edgar, 2007;
Perceived ease of use	Lee et al., 2011; Montazemi & Qahri-Saremi, 2015; Santouridisa & Kyritsi, 2014; Sikdar, Kumar, & Makkad, 2015; Yiu et al., 2007;
Convenience	Nasri, 2011;
trust	Grabner-Kräuter & Faullant, 2008; Guerro, Egea, & Gonzales, 2007; Montazemi & Qahri-Saremi, 2015; Pikkarainen et al., 2004; Santouridisa & Kyritsi, 2014; Suh & Han, 2002; Sikdar, Kumar, & Makkad, 2015;
Sense of safety	Angelakopoulos & Mihiotis, 2011; Ernst & Young Global Limited, 2014; Nasri, 2011; Polasik & Wiśniewski, 2009
Sense of privacy	Angelakopoulos & Mihiotis, 2011;
Education	Meyer, 2006; Staniewski & Szopiński, 2012;
Access to infrastructure	Meyer, 2006; Sikdar et al., 2015;
Sex, age and income	Flavián et al., 2006;
Possession of various financial products	Guerro et al., 2007; Meyer, 2006;

Source: Own elaboration.

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moderate trust of 43%, and no trust of 24.7% of the respondents, while 26.2% of the respondents have no opinion about this matter. Out of all the respondents, 96.4% declare having a bank account, 27.5%—a debit card, 25.3%—a savings account, 15.9%—a credit card, 16.4%—an overdraft on their account, 14% have a loan (including a cash loan), 5.8%—a mortgage, and 12.8%—a deposit. This study verifies the following hypotheses:

H_1. Possession of other bank products has a positive influence on the propensity to use online banking.

H_2. Trust in commercial banks exerts a positive influence on the propensity to use online banking.

H_3. Age of the respondent negatively influences the use of online banking.

H_4. Respondents' level of education positively influences the use of online banking.

H_5. Use of the Internet exerts a positive influence on the propensity to use online banking.

H_6. Income of the respondent has a positive influence on the propensity to use online banking.

4. Results

The use of the Pearson's correlation has allowed to discover statistically significant correlations between the use of online banking and all the variables under examination. Table 2 shows analysis of the correlations between the use of online banking and the variables. The use of the Internet correlates most intensely with the use of online banking. The use of the Internet is a necessary but not sufficient condition for a person to use of online banking. In terms of the power of correlation, the next are the dependencies between the level of education of the respondents and the use of online banking as well as the fact of being a credit card holder and the use of online banking. The weakest among the correlations is the one between the fact that the respondent has a bank account and the use of online banking.

Table 3 presents the percentage of the respondents that use online banking, taking into account such variables as income, having other banking products, age, education, and trust in commercial banks. Out of the people declaring great trust in commercial banks, nearly 40% also declare using online banking. In the group declaring moderate trust, this percentage is almost 40% as well, whereas in the group of people declaring no trust in commercial banks, as little as 26.5% of them use online banking. Nearly 99% of the respondents using online banking possess bank accounts. A very high percentage of people using online banking also have a mortgage (almost 75% of the users of online banking) and a credit card (almost 65% of the users of online banking). Income statistically significantly correlates with the use of online banking. The biggest proportion of online banking users is present in the group of people earning PLN 7000 or more. Over 72% of people in this income group declare using online banking. Among people earning up to PLN 1000, this proportion is the smallest. In this group, less than 20% of people declare using online banking. Analysis of the relation between age and using online banking demonstrates that as the age of the respondents increases, the proportion of online banking users decreases. The age-groups ranging from 25 and 34 as well as 35 and 44 have the largest percentages of users. However, examination of the influence of education on the use of online banking clearly shows that the higher the level of education, the more people use online banking.

Table 2
Correlation analysis.

	The use of online banking		
	Pearson correlation	Significance (two-tailed)	*N*
Age	0.277**	0.000	8663
Level of education	−0.383**	0.000	8657
Trust in commercial banks	0.138**	0.000	8629
The use of the Internet	0.428**	0.000	8656
Having a bank account	0.074**	0.000	8659
Having a debit card	0.298**	0.000	8606
Having a savings account	0.279**	0.000	8610
Having a credit card	0.306**	0.000	8596
Having an overdraft limit	0.248**	0.000	8612
Having a bank loan	0.169**	0.000	8585
Having a mortgage	0.232**	0.000	8575
Having a deposit	0.141**	0.000	8581
Monthly disposable income	−0.257**	0.000	7131

Source: Own calculation on the basis of Social Monitoring Council (2015). Social Diagnosis: Integrated database. Retrieved from: http://www.diagnoza.com.
** Correlation is significant at the 0.01 level (two-tailed).

Analysis of the correlations shows that having other banking products has a positive influence on the propensity to use online banking, which supports hypothesis 1. Trust in commercial banks also exerts a positive influence on the propensity to use online banking. In the group declaring trust in commercial banks, the proportion of the respondents who use online banking is larger, which supports hypothesis 2. The age of the respondents influences the use of online banking in a negative way. This relation is close to a linear one, which altogether supports hypothesis 3. The level of education of the respondents positively influences the use of online banking, which supports hypotheses 4. The results support hypotheses 5 and 6 as well. The use of the Internet is one of the most important factors determining the use of online banking. Analyses show that income correlates with the propensity to use online banking. The proportion of people using online banking increases along with the respondents' incomes.

Regression analysis reveals how different factors affect the use of online banking. The variables under examination account for 35.3% of the reasons for using online banking. The variables that influence the use of online banking to the largest extent are: the use of the Internet and having a mortgage or a credit card (Table 4).

5. Discussion and conclusions

E-banking evolves quickly along with changes in customer needs and emergence of increasingly sophisticated technologies. Internet banking complements brick and mortar branches (Onay & Ozsoz, 2012). Eriksson and Nilsson (2007) stress that self-service technologies should come under examination in the context of all channels since customers do not separate services available via the Internet or via other channels. One of the features of electronic services is the increasingly common synchronization of Internet applications with the mobile phone. One may expect that access to mobile Internet will start becoming gradually cheaper and the capacity of mobile Internet will increase as well. This tendency will offer more possibilities of rendering increasingly technologically advanced services. Mobile tools and solutions are often a continuity of traditional e-services that service providers generate and offer via Internet web pages. E-services, in turn, are an intermediary between services available through traditional channels and mobile services (m-services), which follow the customer everywhere (Szopiński, 2012).

In this study, mortgages and credit cards are the banking products that have the biggest impact on the use of online banking. The fact that a respondent has a bank account does not determine the use of online banking to the same extent as having a mortgage or a credit card.

In the above-mentioned studies, trust is one of the most common factors determining the use of online banking. In this study, trust in commercial banks is one of the variables that determines the use of online banking to the smallest extent in comparison to the other variables under analysis.

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Table 3
The percentage of the respondents that use online banking.

Income							
Up to PLN 1000	Between PLN 1001 and 2000	Between PLN 2001 and 3000	Between PLN 3001 and 4000	Between PLN 4001 and 5000	Between PLN 5001 and 6000	Between PLN 6001 and 7000	7000 and more
18.2	40.2	39.2	45.7	62.8	54.6	60.2	72.1
Having other banking products							
Account	Debit card	Savings account	Credit card	Overdraft limit	Loan	Mortgage	Deposit
98.4	54.3	54.1	64.4	57.9	51	74.9	48.7
Age							
	Up to 24 years of age	25–34 years of age	35–44 years of age	45–59 years of age	60–64 years of age	65 + years of age	
	45.5	46.1	46.5	29.7	21.1	10.5	
Education							
Elementary and lower		Vocational		Secondary		Higher and post-secondary	
4.9		14.2		33.1		56.5	
Trust in commercial banks							
High		Moderate		No trust		No opinion	
39.4		39.4		26.5		24.4	

Source: Own calculation on the basis of Social Monitoring Council (2015). Social Diagnosis: Integrated database. Retrieved from: http://www.diagnoza.com.

On the basis of the foregoing, attracting Internet-based customers, especially the young ones, may determine the profitability of the whole bank. Factors such as convenience of use and safety are very important as well. Since online banking generates lower operational costs, banks may offer products that are more attractive in terms of the price, such as deposits or loans, but competition dependent exclusively on price may result in attracting only price-sensitive customers. Such competition dependent on price is dangerous owing to the fact that if a competitor offers a better product in terms of the price, price-sensitive customers will leave just as easily as they have come. The market for banking services is a perfect example of the "Red Ocean." Kim and Mauborgne (2005) propose the "Red and Blue Ocean" strategies that consist in creating new market space and thus in effectively detaching from the competition by way of offering innovative solutions to the client and simultaneously distinguishing one's offer and lowering the costs. Kim and Mauborgne (2005) claim that the only effective method

Table 4
Regression analysis.

Model summary					
Model	*R*	R^2	Adjusted R^2	Standard error of the estimate	
	0.595[a]	0.354	0.353	0.374	
ANOVA model[b]					
	Sum of squares	df	Mean square	*F*	Significance
Regression	536.328	13	41.256	294.477	0.000[a]
Residual	979.817	6994	0.140		
Total	1516.144	7007			

Coefficients[b]					
	Unstandardized coefficients		Standardized coefficients	*t*	Significance
	B	Standard error	Beta		
(Constant)	−0.142	0.072		−1.979	0.048
Having a bank account	0.086	0.025	0.034	3.444	0.001
Having a debit card	0.109	0.011	0.104	9.796	0.000
Having a savings account	0.121	0.011	0.114	10.792	0.000
Having a credit card	0.148	0.013	0.118	11.099	0.000
Having an overdraft limit	0.075	0.013	0.061	5.839	0.000
Having a bank loan	0.107	0.013	0.081	8.118	0.000
Having a mortgage	0.180	0.020	0.093	9.108	0.000
Having a deposit	0.053	0.014	0.039	3.813	0.000
Trust in commercial banks	0.030	0.005	0.058	5.921	0.000
Age	0.035	0.004	0.109	9.415	0.000
Level of education	−0.067	0.005	−0.139	−12.227	0.000
Use of the Internet	0.204	0.013	0.205	16.282	0.000
Income (net/month)	-7829×10^{-6}	0.000	−0.026	−2.414	0.016

Source: Own calculation on the basis of Social Monitoring Council (2015). Social Diagnosis: Integrated database. Retrieved from: http://www.diagnoza.com.

[a] Predictor: (constants), having a bank account, having a debit card, having a savings account, having a credit card, having an overdraft on an account, having a loan in a bank, having a mortgage, having a deposit account, trust in commercial banks, age, level of education, the use of the Internet, disposable income.

[b] Dependent variable: online banking usage.

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that companies may adopt is to push back the frontiers of the market on which they operate, which will make the problem of competition to become less acute. In pursuit of profit, numerous enterprises engage in open competition. The only result that cut-throat competition for the client brings about is the "Red Ocean" where rivals compete fiercely and exhaust each other with price wars. Kim and Mauborgne (2005) claim that while the majority of companies compete on Red Oceans, such a strategy is becoming less and less effective. The authors claim that an enterprise that will take the leading position in the future will not achieve success through victory over the competition but through creation of the "Blue Ocean," or in other words—unassailable market space. One after another, banks try to compete by way of introducing a greater and greater number of new services. Such actions are a necessary but insufficient condition for the banks to operate on the market. In times of development of e-services, each bank attempts to outdistance others in the number of new solutions they make available in the field of electronic banking. On the other hand, beside the standard services that other banks offer, one of the Polish banks—"Bank Pocztowy," associated with the Polish Post, has assumed a completely opposite direction by focusing on offline services. The Bank has created the "Blue Ocean" by offering a "Nestor" account (which has received prestigious awards) designed especially for pensioners. The Nestor account is free of charge, including free withdrawals and cash deposits in the offices of the Polish Post. Furthermore, the bank offers a service: an order to pay, which is free of charge as well. The service allows the bank's customers to specify the place where they want to receive payment of a particular amount of money, and the postman delivers the cash. The bank has made use of a strong point which is the multitude of people who use the services of the Polish Post. The bank has designed a special offer for a group of lastingly neglected (in marketing terms) consumers.

6. Contributions

The article contributes to the development of the literature concerned with electronic banking by providing knowledge on the factors that seem to produce impact on the acceptance of online banking on the emerging market in Poland. As research by Yuen, Yeow, and Lim (2015) demonstrates, users of online banking differ from non-users depending on the country of residence. In Poland, research on the factors influencing adoption of online banking is lacking. Apart from the study entitled Social Diagnosis, no such large-scale research has yet allowed to analyze, among others, the factors that exert influence on the use of online banking. Statistical analysis of the factors determining the use of online banking in the Polish society has been possible owing to examination of a large sample. The findings provide managers with information about which banking services determine the use of online banking the most. The results also illustrate which banking services the users of online banking most typically select and shows to whom banks should direct their offer.

7. Limitations and further research

The study uses secondary data from Social Diagnosis, research that the University of Finance and Management in Warsaw organizes and conducts every 2 years. The tool which has been is use on biennial basis since 2000 for the purpose of examining various aspects of the Polish people's lives may not change. The number of aspects that the study takes into account does not allow to further explore the questions concerning the use of online banking. The use of online banking is merely one of the many issues that the project Social Diagnosis examines. Thus, analysis of all the significant variables, for example, perceived security or perceived ease of use, is not possible. Therefore, an in-depth study exploring the use of online banking by consumers and people running a business is necessary. Preferably, such a study should examine the expectations of customers in terms of the development of Internet banking. A study by Yusuf Dauda and Lee (2015) on customers' preferences regarding the improvement of Internet banking shows that consumer expectations for the development of this type of banking focus on: the ease of use, including a digital wallet, real-time interaction (video banking), ATMs integrated with smart phones, website customization, biometric services, and digital currency. In a future study, the preferences of Polish customers with regard to the development of online banking could undergo analysis.

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