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Econometric investigation of internet banking adoption in Greece

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Abstract

Purpose – The purpose of this paper is to examine if high branch fees, branch dissatisfaction as well as any previous experience of Greek banking customers with other banking technologies (i.e. Automated Teller Machines (ATMs)) have any impact on the probability of internet banking adoption. Further, the authors comment on the socio-economic and demographic characteristics of Greek banking customers, which effect the decision to adopt internet banking services.

Design/methodology/approach – The authors employed the logistic regression model to examine the probability of Greek customers adopting internet banking based on certain demographic characteristics but also due to high branch fees, any dissatisfaction with branch services or due to previous experience of electronic banking technologies (ATMs).

Findings – After estimating a logistic model, the authors report that branch dissatisfaction and high branch fees have no impact to the internet banking adoption in Greece, therefore Greek customers prefer to visit branches and are willing to pay high fees for the transactions. However, the authors find that ATM users are more likely to adopt internet banking services in Greece.

Research limitations/implications – The authors should employ a technology acceptance model, to test the effect of perceived ease-of-use, perceived usefulness and technology self-efficacy of customers on the probability of e-banking adoption. The authors should also examine other hypotheses using recent data from other European countries and compare the results with those from Greece.

Practical implications – The findings are strongly recommended to Greek bank managers.

Originality/value – The research is primarily motivated by the lack of similar studies to explain empirically the characteristics of Greek bank customers which affect the adoption of internet banking.

Keywords Greece, Adoption, Internet banking, Logit model

Paper type Research paper

1. Introduction

The study of the economics of diffusion of new technologies has received growing attention in recent years. "Diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2003). When new ideas are invented, diffused and adopted or rejected, they lead to certain consequences. Therefore, diffusion is a kind of social change, as alteration occurs in the structure and function of a social system. The end of the Information Technology (IT) boom has led to a consolidation of online technologies, as well as in the banking sector (Arnaboldi and Clayes, 2010). The developments in IT have had an enormous effect in the development of more flexible payment methods and more user-friendly banking services (Akinci *et al.*, 2004). The diffusion and development of internet banking and other electronic payment systems by financial institutions is expected to result in more efficient banking systems. Internet banking is not just a process innovation that allows existing banks to centralise back office operations and increase their efficiency; the existence of virtual and branch offices has important effects on the interaction between customers and the bank (Arnaboldi and Clayes, 2010). Nowadays, banking institutions can offer their

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products and services through such electronic banking channels, more conveniently and economically without reducing the quality of the existing levels of service. The adoption of internet banking by customers has been a well researched topic. Academic papers find that certain customers' characteristics have an impact on the adoption of internet banking. More specifically, they report that male customers (Lawson and Todd, 2003; Akinci *et al.*, 2004; Polasik and Wisniewski, 2009), young customers (Polatoglu and Ekin, 2001; Akinci *et al.*, 2004; Kim *et al.*, 2005; Chang, 2005; Flavian *et al.*, 2006; Mavri and Ioannou, 2006; Hernandez and Mazzon, 2007), with high levels of education (Lawson and Todd, 2003; Corrocher, 2006; Kim *et al.*, 2005; Hernandez and Mazzon, 2007; Polasik and Wisniewski, 2009), high levels of income (Polatoglu and Ekin, 2001; Lawson and Todd, 2003; Corrocher, 2006; Chang, 2005; Flavian *et al.*, 2006), high levels of internet use (Corrocher, 2006; Kim *et al.*, 2005) and prior experience of other electronic banking technologies, such as Automated Teller Machines (ATMs), phone banking, mobile banking and debit or credit cards, are more likely to adopt internet banking (Kolodinsky *et al.*, 2004; Kim *et al.*, 2005; Polasik and Wisniewski, 2009).

This paper contributes to the large literature of the economics of diffusion and the economic analysis of the determinants of adoption of new technologies (internet banking) using econometric models. It is a matter of vital importance for bank customers and managers to get full information about the economic benefits of internet banking adoption. We test whether high branch fees have any impact on the probability of internet banking adoption and whether branch dissatisfaction and previous experience with ATMs has a positive effect on the adoption of internet banking services. This paper empirically examines hypotheses on the economics of banking services using a logit model of a survey from bank customers. The research is primarily motivated by the lack of similar studies to explain empirically the characteristics of Greek bank customers which affect the adoption of internet banking. In particular, we test the following hypotheses:

H1. Branch dissatisfaction has a positive impact on the adoption of internet banking services.

H2. High branch fees have a positive impact on the adoption of internet banking services.

H3. ATM users are more likely to adopt internet banking services.

This paper is organised as follows: Section 2 examines the theory of innovation and the literature review of the internet banking adoption, Section 3 describes our data and Section 4 explains the methodology employed. Section 5 is the empirical analysis of this paper and Section 6 is the concluding section, where we summarise all our findings.

2. Theory-literature review

Innovation[1] and the development of new banking products have become the key strategic focus for the most successful banks (see Rogers, 2003; Doyle, 1998). e-Banking is an innovative product that banking institutions offer all over the world with superior benefits for the customers. However, there is a process through which customers pass from initially gaining knowledge of an innovative product, to the confirmation of adoption of this particular product. Rogers (2003) identified the innovation-decision process, and argues that there is a relative speed at which an innovation is adopted by

individuals, and this is called the rate of adoption (for more information see Rogers, 2003). It is measured as the number of individuals who adopt a new product in a specific period. According to Faria *et al.* (2002) the various theoretical contributions of technology of diffusion have been classified into epidemic, rank, stock, order and evolutionary models (Karshenas and Stoneman, 1995). In epidemic models the explanation of technology diffusion depends on the spread of information about the existence of a new technology (Mansfield *et al.*, 1977). In rank models the decision to adopt an innovation or not depends on the different characteristics of potential adopters (Davies, 1979), while in stock models this decision depends on the number of actual users (Reinganum, 1981). In order models, the adoption depends on the order of adoption with early adopters having greater benefits than later adopters (Fudenberg and Tirole, 1985) and finally in the evolutionary models the decision to adopt a new technology comes after the competition of two or more technologies (Colombo and Mosconi, 1995).

The adoption of internet banking relies on the different characteristics of customers adopting this technology, therefore we follow the rank approach. Socio-economic characteristics[2] (income, location, employment, education and family structure), personal and demographic characteristics (age, gender, disability and ethnicity) as well as the familiarity with technology are the determinants that affect the adoption of internet banking (Lera-Lopez *et al.*, 2011). As far as the gender is concerned, various studies report that male customers are more likely to adopt internet banking services than female customers (Lawson and Todd, 2003; Akinci *et al.*, 2004; Polasik and Wisniewski, 2009). This is probably due to the fact that males are more exposed to technology and are more likely to explore new banking technologies. The age of the customers is another important characteristic that affect the probability of internet banking adoption. Studies have shown that younger customer are more prone to adopt internet banking than older customers (Polatoglu and Ekin, 2001; Akinci *et al.*, 2004; Kim *et al.*, 2005; Chang, 2005; Flavian *et al.*, 2006; Mavri and Ioannou, 2006; Hernandez and Mazzon, 2007). Younger customers are more familiar with new technologies and are less risk averse than senior customers. The level of education is another characteristic that may affect the adoption of internet banking. The majority of studies show that customers with high levels of education are more likely to adopt internet banking in relation to customers with lower levels of education (Lawson and Todd, 2003; Corrocher, 2006; Kim *et al.*, 2005; Hernandez and Mazzon, 2007; Polasik and Wisniewski, 2009). Furthermore, it is found that high level of customers' income is associated with the adoption of internet banking (Polatoglu and Ekin, 2001; Lawson and Todd, 2003; Corrocher, 2006; Chang, 2005; Flavian *et al.*, 2006). It is reported that customers with higher levels of education and income are more exposed to new technologies and are more likely to adopt internet banking. Moreover, it is reported that customers with high levels of internet use and computer ability are more likely to adopt internet banking (Corrocher, 2006; Kim *et al.*, 2005). Likewise, customers' prior experience of other electronic banking technologies, such as ATMs, phone banking, mobile banking and debit or credit cards, has a positive effect on the adoption of internet banking services (Kolodinsky *et al.*, 2004; Kim *et al.*, 2005; Polasik and Wisniewski, 2009). Furthermore, it is reported that outright home owners are less likely to adopt internet banking. This is due to the fact that they have less complex transactions than those in rental schemes, as they do not need to pay monthly instalments for their mortgages (Chang, 2005). On the other hand, married banking customers are expected to perform more complex transactions and therefore, are more likely to adopt internet banking (Sohail and Shanmugham, 2003). In addition, self-employed banking customers

are more likely to adopt internet banking services as these customers would have to conduct all work related banking transactions by themselves, and due to their limited time they would be open to new banking technologies (Lawson and Todd, 2003).

3. Data description

The banking sector in Greece has experienced major transformations and wide structural reforms in 1990s and 2000, i.e. before and after the EMU participation (see Chortareas *et al.*, 2009) and the adoption of internet banking technology. In this study, we extend the work published by Mavri and Ioannou (2006) who analyse 2002 Greek data about the internet banking adoption for Athens and Thessaloniki; our recent survey has responses from customers of all top Greek banks. Our data were collected in 2008 after the distribution of 300 questionnaires in Thessaloniki (northern Greece). Thessaloniki was chosen mainly due to convenience and the limited time of this study. Bryman and Bell (2003) explain that a convenience sample is one that is simply available to the researcher by virtue of its accessibility. The city of Thessaloniki is the second largest city in Greece, and the capital of the Greek region of Macedonia. According to the 2001 census, the entire Thessaloniki area had a population of 1,057,825 residents.

Recent reports by Eurostat (2009) show that only 38 per cent of Greek households have internet access with a 33 per cent broadband (DSL) connections and 5 per cent connections via modems. It is also reported that 53 per cent of Greek individuals aged between 16 and 74 years old have never used the internet and only 5 per cent of the individuals who use the internet perform online banking transactions in Greece. Furthermore, Thessaloniki had the largest increase in the internet penetration for the year 2008 compared to other regions in Greece (see Observatory for the Greek IS, 2010).

The method of "random sampling" was applied to this study as explained in Mavri and Ioannou (2006). The population of this research is individuals over the age of 18 years old, who perform banking transactions, either within bank branches or electronically. Respondents were selected randomly, after the distribution of questionnaires, outside banking institutions and other places of interest in Thessaloniki. The purpose of the questionnaire was to gather recent figures on the demographic characteristics of bank customers and get information on whether they are currently e-banking users or not. Moreover, we are interested in respondents' previous experience with the internet and other electronic banking technologies, as we expect these to have a positive relationship with the adoption of e-banking. According to Mavri and Ioannou (2006), the number of observations required to estimate the probability that an individual is willing to use Greek online banking was estimated to be 178. For our study, we use Equation (1) to calculate the minimum number of observations required. Following Mavri and Ioannou (2006), we estimate the probability that an individual will use e-banking services, so as the sample could be considered to be representative of the region. According to the Observatory for the Greek IS (2010), the penetration in Thessaloniki for the year 2008 was estimated at 19 per cent compared to the overall Internet penetration of Greece:

$$Z = \frac{e}{\sqrt{p(1-p)/n}} \Leftrightarrow n = \frac{Z^2[p(1-p)]}{e^2} \Leftrightarrow n = \frac{(1.96)^2[0.19(0.81)]}{0.05^2} = 197 \qquad (1)$$

where p is the percentage of internet penetration in Thessaloniki, equal to 19 per cent. With a 95 per cent confidence interval, we have a 5 per cent tolerable error included

in Equation (5.3-9) with $Z = 1.96$. Hence, we find that the number of observations required for estimating the probability of e-banking adoption for Thessaloniki is 197 responses.

In this study, a total of 217 usable questionnaires were collected, which turns to a 72 per cent respond rate. Out of the 217 respondents 93.5 per cent of the customers are e-banking users and branch banking users and they use either the telephone, ATMs, mobile or internet banking to perform their banking transactions, while the remaining 6.5 per cent of the customers choose to perform their bank transactions only to bank branches.

Table I presents the profile of the respondents (e-banking and non-e-banking users) to this study. Note that there would be an equal distribution of questionnaires to men and women, however, it seems that women were more willing to participate in this research; this result is in line with Gan *et al.* (2006) for New Zealand. The majority of our respondents are banking customers between 18 and 40 years old, female and married, with undergraduate degrees and they earn between €301 and €1,500 per month. Furthermore, they are private employees, homeowners, PC owners with internet connection. As far as the branch banking is concerned, the majority of our respondents are satisfied with branch employees, while most of them never access banks' official web pages and pay at least €1 or less for their branch transactions (per month). Regarding the Greek e-banking users, ATMs as well as telephone banking are more popular choices to them with 32.18 per cent of the total respondents[3].

The low figures for internet banking can be explained by the fact that the broadband (DSL) penetration is low in Greece (Eurostat, 2009). Delgado *et al.* (2007) explain that "the differences across countries in Internet banking penetration to be largely explained by the differences in the availability of access to the Internet". Among the countries with the lowest rate of internet penetration in Europe are Spain, France and Portugal, followed by Italy, Germany and Belgium. On the other hand, Scandinavian countries have the highest internet penetration rates. Delgado *et al.* (2007) report that in spite of the low internet penetration reported for Spain and Portugal, the adoption of internet banking was at higher levels when compared with France, Germany and Italy. They explain that this situation is not typical, as it exhibits a certain level of utilisation of the internet banking channel, above what would be expected when considering the level of the internet penetration in these countries.

4. Methodology

In order to examine the adoption of internet banking we need to estimate the probability of each customer using internet banking services. This can be achieved by employing the logit model. This model estimates for each customer the logarithm of the probability of using internet banking services to the probability of not using internet banking services. The logit can be calculated by the following equation:

$$\begin{aligned} \log itp_i = \log\left[\frac{p_i}{(1-p_1)}\right] &= \beta_0 + \beta_1 * Old_i \\ &+ \beta_2 * Male_i + \beta_3 * Married_i \\ &+ \beta_4 * Uniedu_i + \beta_5 * Highinc_i \\ &+ \beta_6 * Selfemp_i + \beta_7 * Homeowner \\ &+ \beta_8 * Internetcon_i + \beta_9 * Brandchdiss_i \\ &+ \beta_{10} * Highbranchfees_i + \beta_{11} ATMusers_i \end{aligned} \quad (2)$$

Variables	No. of respondents	%
Age		
18-40	136	62.67
41-60	63	29.03
61 and over	18	8.29
Total	217	100.00
Gender		
Male	99	45.62
Female	118	54.38
Total	217	100.00
Marital status		
Single	60	27.65
Married/living with partner	140	64.52
Divorced/widowed/separated	17	7.83
Total	217	100.00
Educational level		
Primary school	7	3.23
High school	61	28.11
Occupational course	57	26.27
Undergraduate degree	73	33.64
Postgraduate degree	17	7.83
Doctorate or higher	2	0.92
Total	217	100.00
Monthly income		
0-€300	24	11.06
€301-€900	82	37.79
€901-€1,500	84	38.71
€1,500 and over	27	12.44
Total	217	100.00
Employment status		
Public employee	29	13.36
Private employee	114	52.53
Self-employed	30	13.82
Student	13	5.99
Retired	19	8.76
Home making	7	3.23
Serve army	1	0.46
Unemployed	4	1.84
Total	217	100.00
Home ownership		
Home owner	164	75.58
Tenant	53	24.42
Total	217	100.00
PC ownership		
Yes	164	75.58
No	53	24.42
Total	217	100.00
Internet connection		
Yes	133	61.29
No	84	38.71
Total	217	100.00

(*continued*)

Table I.
Sample demographic characteristics for Greek banking customers

Variables	No. of respondents	%
Satisfaction with branch banking employees		
Very satisfied	25	11.52
Satisfied	175	80.65
Not satisfied	17	7.83
Total	217	100.00
Access to banks' web pages		
Never	171	78.80
Once a week	13	5.99
Twice a week	5	2.30
More than 3 times per week	8	3.69
Once/twice per month	20	9.22
Total	217	100.00
Average amount spent on branch fees per month		
€1 or less	106	48.85
€2-€5	86	39.63
€6-€10	8	3.69
€11-€20	5	2.30
€21 and over	12	5.53
Total	217	100.00
Branch banking users	172	98.85
Telephone banking	56	32.18
ATM	203	93.10
Internet banking	35	15.52
Mobile banking	23	11.49

Table I.

Or it can be transformed to:

$$p_i = \frac{\exp(\beta_0 + \beta_1 * Old + \cdots + \beta_{11} * ATMusers_i)}{1 + \exp(\beta_0 + \beta_1 * Old_i + \cdots + \beta_{11} * ATMusers_i)} \quad (3)$$

We examine the adoption of internet banking in Greece, where the dependent variable is internet banking adoption, which is discrete as it takes the value 0 when a customer is a non-internet banking user and 1 if the customer is an internet banking user. P is the probability of adopting internet banking and i is the number of customers. We also consider independent variables that affect this adoption, such as demographic characteristics, technology familiarity, branch dissatisfaction, high branch fees and previous experience with ATMs. We follow recent academic papers to formulate our model that will test the adoption of internet banking. Various papers find that the decision to adopt internet banking depends on customers' demographic characteristics (Laforet and Li, 2005; Mavri and Ioannou, 2006; Gan *et al.*, 2006, etc.), computer and internet familiarity (Corrocher, 2006; Kim *et al.*, 2005; Lera-Lopez *et al.*, 2011) and past experience with other e-banking technologies (Kolodinsky *et al.*, 2004). We consider senior customers (old variable) to be of 60 years of age or more and high-income respondents to have a monthly income of €900 or higher.

Branch dissatisfaction measures whether the respondent is dissatisfied with branch banking services and branch fees are considered to be high if the respondent pays more than €11 for branch banking transactions. ATM users are respondents that have previous experience with performing banking transactions over ATMs.

Since previous experience with internet has a positive effect on the adoption of internet banking, we add the ATM users, in order to test whether customers that access banks' web pages and conduct transactions over ATMs are more likely to adopt internet banking. We further add branch dissatisfaction and the high branch fees[4] variables, as we are able to test whether customers not receiving satisfactory services in bank branches or/and pay high branch fees are more likely to adopt internet banking services.

Therefore, we can empirically test whether the characteristics of customers have any impact on the adoption of internet banking (following the literature) as well as the three hypotheses stated in Introduction (*H1-H3*) using econometric modelling.

5. Empirical results

Table II shows the results from our Logit model. The χ^2 test, which is the log likelihood ratio, tests the overall significance of our regressors. Since the χ^2 value is 49.75, we reject the null hypothesis of overall non-significance and accept that at least one of our regressors is significant in explaining the adoption of internet banking.

First, the ATM users variable is significant at 1 per cent level of significance and positively related with the adoption of internet banking; hence we accept the hypothesis that ATM users are more likely to adopt internet banking services. Recent papers report that customers with prior experience of other e-banking technologies are more likely to adopt internet banking (Kolodinsky *et al.*, 2004; Kim *et al.*, 2005; Polasik and Wisniewski, 2009).

	Modelling internet banking user by logit			
	Coefficient	SE	*t*-value	*p*-value
Constant	−31.05	0.419	−39.2	0.000
Old	−27.051	1.95E−13	−1.39E + 14	0.000***
Male	0.737	0.441	1.67	0.096*
Married	−0.508	0.473	−1.07	0.284
Uniedu	1.308	0.486	2.69	0.008***
Highinc	1.592	0.542	2.94	0.004***
Selfemp	−0.516	0.639	−0.807	0.420
Homeonwer	0.036	0.51	0.07	0.944
Intconnect	1.217	0.622	1.96	0.051*
Branchdiss	−0.166	0.884	−0.188	0.851
High branch fees	0.629	0.681	0.925	0.356
Atm users	26.651	0.419	63.7	0.000***
log likelihood	−70.998	No. of states		2
No. of observations	217	No. of parameters		12
Baseline log lik.	−95.87	Test χ^2 (11)		49.746
AIC	165.997	AIC/*n*		0.765
Mean Ibuser	0.161	VAR(IBUSER)		0.135
	Count	Frequency	Probability	loglik
State 0	182	0.839	0.839	−23.56
State 1	35	0.161	0.161	−31.68
Total	217	1	1	−55.24

Note: ***,**,*Significant at 1, 5 and 10 per cent level, respectively

Table II.
Logit results (Equation (2))

Looking at the results related to the socio-demographic variables, the old variable is significant at 1 per cent level of significance and negatively related with the adoption of internet banking. This can be explained by the fact that older customers are not familiar with technology, they are risk averse and they prefer personal branch banking (Gan *et al.*, 2006). Male banking customers are more likely to adopt internet banking than female customers and this is in line with Lawson and Todd (2003), Akinci *et al.* (2004) and Polasik and Wisniewski (2009). Additionally, university education is significant and positively related with the probability of adopting internet banking at 10 per cent level of significance. Kim *et al.* (2005) and Lera-Lopez *et al.* (2011) find that individuals with higher levels of education are more familiar with internet technologies and they do not require training. At 10 per cent level of significance we find that high income is also significant and has a positive impact (higher probability) on the decision of customers to adopt internet banking. Kim *et al.* (2005) and Huang (2005) find that customers with higher levels of income have a high value of time and therefore by performing banking transactions electronically they can save time. Internet connection also plays an important role in a customers' decision to adopt internet banking or not. We report that internet connection has a positive and significant effect on Greek banking customers' internet banking adoption; this result is in line with Corrocher (2006) and Kim *et al.* (2005).

6. Conclusion

In this paper, weexamine if high branch fees, branch dissatisfaction as well as any previous experience of Greek banking customers with other banking technologies (i.e. ATMs) have any impact on the probability of internet banking adoption. Further, we comment on the socio-economic and demographic characteristics of Greek banking customers, which effect their decision to adopt internet banking services.

After estimating a logistic model, we report that branch dissatisfaction and high branch fees have no impact to the IB adoption in Greece, therefore Greek customers prefer to visit branches and are willing to pay high fees for their transactions[5]. This is due to the fact that customers are aware of the potential electronic risk associated with e-banking services and they may prefer to have face to face contact with personal bankers when they conduct their banking transactions (Kolodinsky *et al.*, 2004; Pikkarainen *et al.*, 2004). However, we find that ATM users are more likely to adopt internet banking services in Greece; this is in line with Kolodinsky *et al.* (2004), Kim *et al.* (2005) and Polasik and Wisniewski (2009).

Banker *et al.* (1998) identify that the continuing adoption of internet technology is a crucial strategic decision for firms to make, since technology improves the operational processes conducted within firms. Moreover, it enhances competitiveness by giving the adopting firms competitive advantage and higher levels of operating efficiency are achieved. The provision of e-banking in Greece is still in its infancy, probably due to the fact that the internet penetration in Greece is very low, and customers are more confident in performing their banking transactions in physical bank branches. Banks can exploit the provision of banking services electronically, aiming clearly at the advertisement of these products to customers that are not yet familiar with these services as they offer to banks significant cuts in costs, reduction in staff and physical branches. Banking institutions should also maximise customers' satisfaction, by reducing the banking fees to the minimum. Banks can simplify various transactions that can be processed through telephone or internet banking, and therefore

fewer teller employees would be required. Similarly, cards and loans payments could be processed through electronic kiosks that are located in bank branches. Hence, the number of employees and physical branches can be reduced. In addition, banks can reduce significantly their operational costs, by exploiting economies of scale. By reducing their costs, banks should pass this reduction as a reduction in the fees imposed, while they could also offer lower interest rates on loans and mortgages, and higher interest rates in savings/deposits accounts. Note that the e-banking fees and commissions for transactions in Greece are less than branch fees, while internet banking fees are less than the ATM and branch fees (for more details see Giordani *et al.*, 2009). Therefore, it is concluded that Greek customers prefer most the traditional banking because they worry about possible high electronic risk that comes with the foray into e-banking and this in line with Cunningham *et al.* (2005). Hence, Greek banks can attract their customers to electronic services if they design their marketing offers or value propositions according to the needs of these groups.

Our results provide recommendations to the Greek bank managers and help customers in improving relationships with new technologies. The findings of this study are limited to a population (Thessaloniki) which represents the current situation in Greece. Following the most recent studies, we empirically test several hypotheses related to a number of significant adoption factors. While this research has reported some interesting results from an extended logit model, further research is possible. We should employ a technology acceptance model, to test the effect of perceived ease-of-use, perceived usefulness and technology self-efficacy of customers on the probability of e-banking adoption. We should also examine other hypotheses using recent data from other European countries and compare the results with those from Greece.

Notes

1. An innovation is "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Rogers, 2003).
2. Socio-economic, personal and demographic characteristics are used as control variables.
3. More detailed information on descriptive statistics and correlations is presented in Appendix.
4. In Greece, internet banking services cost less than branch and ATM services (Giordani *et al.*, 2009).
5. Giordani *et al.* (2009) find that in Greece, banks' branch fees are much higher than the internet banking fees.

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(The Appendix follows overleaf.)

Appendix

Table AI.
Descriptive statistics and correlations

Means, SDs and correlations					
The sample is: 1-217					
Means					
IBUSER	OLD	MALE	MARRIED	UNIEDU	HIGHINC
0.16129	0.073733	0.45622	0.64977	0.42396	0.50691
SELFEMPL	HOMEOWNER	INTERNETCON	BRANCHDISSHIGHBRANCHFEES	ATMusers	
0.13825	0.74654	0.61751	0.078341	0.078341	0.93548
SDs (using T-1)					
IBUSER	OLD	MALE	MARRIED	UNIEDU	HIGHINC
0.36865	0.26194	0.49923	0.47814	0.49533	0.50111
SELFEMPL	HOMEOWNER	INTERNETCON	BRANCHDISSHIGHBRANCHFEES	ATMusers	
0.34596	0.43600	0.48712	0.26933	0.26933	0.24624
Correlation matrix					
	IBUSER	OLD	MALE	MARRIED	UNIEDU
IBUSER	1.0000	−0.12373	0.17690	0.0067780	0.33369
OLD	−0.12373	1.0000	−0.010605	−0.014650	−0.17068
MALE	0.17690	−0.010605	1.0000	0.051839	0.15029
MARRIED	0.0067780	−0.014650	0.051839	1.0000	−0.054319
UNIEDU	0.33369	−0.17068	0.15029	−0.054319	1.0000
HIGHINC	0.28214	−0.14498	0.27418	0.22269	0.24926
SELFEMPL	0.0058549	−0.11301	0.14243	−0.013800	0.0075945
HOMEOWNER	0.025087	0.16439	0.065770	0.14962	0.0068165
INTERNETCON	0.24201	−0.28592	0.11168	0.11789	0.31063
BRANCHDISS	−0.034595	−0.016633	0.11171	−0.10951	0.027507
HIGHBRANCHFEES	0.10529	−0.082257	−0.026022	−0.037607	0.096913
ATMusers	0.11516	−0.35657	−0.060743	0.0038053	0.18734
	HIGHINC	SELFEMPL	HOMEOWNER	INTERNETCON	BRANCHDISS
IBUSER	0.28214	0.0058549	0.025087	0.24201	−0.034595
OLD	−0.14498	−0.11301	0.16439	−0.28592	−0.016633
MALE	0.27418	0.14243	0.06577	0.11168	0.11171
MARRIED	0.22269	−0.013800	0.14962	0.11789	−0.10951
UNIEDU	0.24926	0.0075945	0.0068165	0.31063	0.027507
HIGHINC	1.0000	0.15469	0.14579	0.15313	−0.021182
SELFEMPL	0.15469	1.0000	0.17199	0.095455	0.032285

(continued)

HOMEOWNER	0.14579	0.17199	1.0000	−0.044401	−0.027253
INTERNETCON	0.15313	0.095455	−0.044401	1.0000	−0.15872
BRANCHDISS	−0.021182	0.032285	−0.027253	−0.15872	1.0000
HIGHBRANCHFEES	0.047423	0.18134	0.091025	0.088302	−0.021176
ATMusers	0.078670	−0.11220	−0.15302	0.17929	0.0067557
	HIGHBRANCHFEES	ATMusers			
IBUSER	0.10529	0.11516			
OLD	−0.082257	−0.35657			
MALE	−0.026022	−0.060743			
MARRIED	−0.037607	0.0038053			
UNIEDU	0.096913	0.18734			
HIGHINC	0.047423	0.078670			
SELFEMPL	0.18134	−0.11220			
HOMEOWNER	0.091025	−0.15302			
INTERNETCON	0.088302	0.17929			
BRANCHDISS	−0.021176	0.0067557			
HIGHB RANCHFEES	1.0000	0.0067557			
ATMusers	0.0067557	1.0000			

Table AI.

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