STUDY ON THE EVOLUTION AND USE OF INTERNET BANKING SERVICES IN ROMANIA

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Abstract
Nowadays, Internet banking is a service provided by all Romanian banks which has become a daily need for millions of users. This study contains a brief overview of the Internet banking services usage level in the European Union for the period 2007-2016. An increasing in the use of Internet banking services in the EU can be observed at the level of the analysed period. At the same time we compared the users (individuals aged 16 to 74) of Internet banking services to other European countries and we found that the users of the Internet banking services in Romania are still far below the European average but the trend is an upward one. In this study we have focused our attention only on Internet banking, as it is the most commonly used payment instrument in the Romanian practice of remote access payment instruments. The indicators considered in this study were the Internet banking users and the Internet users. We have used the model of the simple linear regression to highlight the existence of a relationship between the variables. In this respect we used statistical data taken from Eurostat and Romanian Ministry of Communications and Information Society as well as data provided by the Romanian National Institute of Statistics for the period 2009-2014. The results of the model have pointed out the fact that the rise of the number of Internet users leads to an increase of the number of Internet banking users.

Keywords: Internet banking, Internet users, simple linear regression, Romania
JEL Classification: C10, G21, L86

1. Introduction

Electronic remote access solutions such as Internet banking have become a daily need for millions of users around the world.

Internet banking is a service provided by Romanian banks, through which the users of the service have full and instant control over the account. With this service, users have the ability to make various online transactions and transactions from home or anywhere they have access to the internet via an internet connected device (laptop, desktops, tablet, smartphone).

The main advantages of Internet banking are: permanent transaction monitoring, online payments, saving time, easy, cheap and prompt administration.

In this paper, we have focused our attention only on Internet banking, as it is the most commonly used payment instrument in the Romanian practice of remote access payment instruments at the level of the analysed period.

2. Literature review

With the passage of time and the advancement of technology to meet the demands of customers banks introduced, in addition to traditional activities made at bank counters, electronic transaction technologies. Many banks started using Internet banking and perform their mainly activities through electronically like banking transaction such as writing checks, paying bills, transferring funds, printing statements, and looking up account information.

In specialized literature, we find many definitions of the term as follows.

Internet banking uses the Internet to deliver banking activities such as transferring funds, paying bills, viewing current and savings account balance, paying mortgages and purchasing financial instruments and certificates of deposits [10].
Internet banking refers to systems that enable bank customers to get access to their accounts and general information on bank products and services through the use of bank’s website, without the intervention or inconvenience of sending letters, faxes, original signatures and telephone confirmations [12].

In Gurău’s opinion (2002) Internet banking is one of the newest Internet technology applications, which promises multiple benefits both for the financial institutions and for clients. At the same time he investigates and analyses the present situation of online banking in Romania, and the appropriate strategies for the successful implementation and development of online banking services in the Romanian context.

The researchers like Chang (2003), Sullivan and Wang (2005) (cited in [12]) view Internet banking as a process innovation whereby customers handle their own banking transactions without visiting bank tellers.

Sabi (2014) says that the Internet banking phenomenon has transformed the way banks across the world carries out banking transactions bringing new strategic directions for investment in banking information and communication technologies, and also presents the current level of research on Internet banking in developing countries through a content analysis of existing literature.

Adoption and use of Internet banking must be viewed and understood from the perspective of the consumer. Lichtenstein and Williamson (2006) provide an understanding of how and why specific factors affect the consumer decision whether or not to bank on the Internet, in the Australian context. They provided a theoretical framework that conceptualizes and links consumer-oriented issues influencing adoption of Internet banking. They shows that a bank must first attract consumer attention to the Internet banking service, after that the consumer assesses whether the service offers convenience, usability, accessibility, self-efficacy. The consumer also considers whether the perceived relative advantages of Internet banking compared with other banking forms outweigh perceived risks and costs. In addition, the availability of sufficient support and in depth knowledge from the bank and its employees contribute significantly to the adoption decision.

With the use of the online banking channel banks are able to offer almost all their products and services online. Attractiveness to Internet banking is enhanced by the ability to conduct banking transactions anytime and anywhere, faster and with lower fees compared to using traditional bank branches [9] (cited in [6]).

Nor et al. (2011) investigated the influence of the most relevant 8 factors that had the highest percentages of occurrence, factors that may influence more e-banking adoption: perceived usefulness, perceived ease of use, compatibility, self-efficacy, technical resources, security, cost and time, and they found that individual perceptions regarding perceived usefulness, compatibility, technical resources, security and cost were the most important attributes in the intention to use electronic Banking services.

Safeena et al. (2010) states that Internet banking is the latest and most innovative service offered by the banks in a study which was aimed at examining the impact of perceived usefulness, perceived ease of use, consumer awareness on internet banking and perceived risks on the acceptance of Internet banking by the consumers.

We consider that it should be reminded that electronic banking is not the same with the term of Internet banking although the latter is undoubtedly the most widespread type of it.

The most commonly used electronic distribution systems for banking services are: credit cards and debit cards, computerized tools (ATMs, POS), payment instruments with remote access (Internet banking, Mobile banking, Home banking).
3. The Internet banking in Romania compared to other European countries

In the last 10 years Internet banking has experienced explosive growth in many European countries as these services have been adopted largely by banking institutions. The primary reason for the growth in Internet banking services is that they reduce costs and enhance profits for banks, while enriching customer convenience through the ease and rapidity with which transactions are executed [11].

A short overview of the Internet banking services usage level in the European Union shows that the penetration of these services had a rapid grow jumping from 25% in 2007 to 49% in 2016 (Figure 1).

![Figure 1. The usage of Internet banking services in EU countries between 2007 and 2016](source: Eurostat)

Table no. 1. shows us to what extent the Europeans from developed economies trust the Internet banking and use it, and the situation in Romania.

<table>
<thead>
<tr>
<th>Country</th>
<th>Norway</th>
<th>Denmark</th>
<th>Finland</th>
<th>Netherlands</th>
<th>Sweden</th>
<th>Estonia</th>
<th>UK</th>
<th>Romania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet</td>
<td>91%</td>
<td>88%</td>
<td>86%</td>
<td>85%</td>
<td>83%</td>
<td>79%</td>
<td>64%</td>
<td>5%</td>
</tr>
<tr>
<td>banking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>users</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Eurostat, b- break in time series

Northern European economies lead the rankings with a very high percentage. Their performance is based on the fact that they endowed with excellent digital infrastructures, reliable innovation systems, and have the highest level of education in Europe.

By comparison, in Romania, the percentage of individuals using Internet banking in 2016 was only of 5%, which places the country at the end of the European list. The low percentage shows that Romanians are very reluctant when it comes to conduct any online transactions. This is the most serious problem Romania is facing regarding the use of Internet banking by its citizens, as a digital economy is on one hand pushed forward by the online transactions of its citizens.

In Romania, the Internet is used to a large extent to access social networks (Facebook, LinkedIn, etc.) and the least to access the Internet banking application from all banking services.

It's worth mentioning that Romania has one of the fastest Internet speed in Europa.
Figure 2 illustrates that Internet banking is the most widely used remote access payment instrument in Romania at the level of the analysed period.

![Diagram](image)

Figure 2. The evolution of Internet banking users, Home banking users, Mobile banking users (mil)
Source: www.comunicatii.gov.ro processed by the author

The Internet banking services in Romania are still far below the European average but it has an upward trend.

4. The Internet banking in Romania

The recent literature shows an increased interest for the Internet banking services in Romania. There are studies from 2009 that have analysed Internet banking services from different perspectives, such as the attitude, the behaviour and the tendencies of the Romanian consumers and the penetration of these services in Romanian market [1]. We find studies in which it was analysed the way in which the Internet banking services contribute to the enhancement of the overall efficiency of Romanian banks. We also find studies that analyse the Romanian Internet banking market from the perspective of cloud computing services [3].

Further on we present the evolution of Internet banking users in Romania (Table no. 2).

<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarter</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td>Internet banking users</td>
<td>0.25</td>
<td>0.29</td>
<td>1.22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarter</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td>Internet banking</td>
<td>2.7</td>
<td>2.64</td>
<td>2.73</td>
</tr>
</tbody>
</table>
An increasing of the Internet banking services in Romania has been observed at the level of the analysed period.

5. Research methodology and data

Data used in this study are statistical data according to Eurostat and Romanian Ministry of Communications and Information Society as well as data provided by Romanian National Institute of Statistics for the period 2009-2014.

We have applied the simple linear regression model that has the following equation:

\[ Y = \alpha + \beta X + \varepsilon \]  \hspace{1cm} (1)

where: 
- \( Y \) – is the dependent variable
- \( X \) – is the independent variable
- \( \alpha, \beta \) – are parameters of linear regression model
- \( \varepsilon \) – is the residual value of the linear regression model.

The indicators considered in this study are: Internet users (mil people) (IB), average number of Internet banking users (mil people) (IBU). As the dependent variable we have the average number of Internet banking users.

6. Main findings

Within the linear regression model, the independent variable is provided by Internet users. Data have been processed by means of the SPSS 17.0 software.

Table no. 3. illustrates the results related to descriptive statistics of variables in the study.

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.897 (a)</td>
<td>.804</td>
<td>.755</td>
<td>.507</td>
</tr>
</tbody>
</table>

\( a \). Predictors: (Constant), Internet users

The value of R Square, the coefficient of determination, quantifies goodness of fit, respectively the value of 0.804 shows us that 80.4% of the variance of the dependent variable (average number of Internet banking users) is explained by the independent variable (Internet users).

Table no. 4. shows the ANOVA and F test results indicating that the model is significant statistically as \( p < 0.05 \).

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>4.234</td>
<td>1</td>
<td>4.234</td>
<td>16.457</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>1.029</td>
<td>4</td>
<td>0.257</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>5.263</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( a \). Predictors: (Constant), Internet users
\( b \). Dependent Variable: Internet banking users
Table no. 5. illustrates the regression coefficients calculated (including the standardized Beta coefficient) as well as the results of their significance test (if they are significantly different than zero or not).

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Constant)</td>
<td>-2.839</td>
<td>1.344</td>
<td>-2.112</td>
<td>.000</td>
</tr>
<tr>
<td>Internet users</td>
<td>0.538</td>
<td>0.132</td>
<td>4.056</td>
<td>.000</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Internet banking users

The equation of the simple regression model is the following:

\[ IBU = -2.839 + 0.538 \cdot IU + \varepsilon \] (2)

The rise of number of the Internet users by one unit value (one million people) leads to an increase of average number of Internet banking users with 0.538 mil people.

5. Conclusions

The Internet banking services have recorded an increase of the usage among the EU population in the last 10 years.

Internet banking is the most used remote payment instrument in Romania, but the other two types (Home banking, Mobile banking) are not excluded from being used in the future by bank customers. For the bank's customers, the most important advantages of these services are the availability of these services: 24 hours, 7 days per week.

Internet banking helps banks reduce operating costs leading to a higher banking efficiency.

On-line banking through the Internet banking service, due to the wide range of Internet operations, generates, besides large benefits, and risks, due mainly to the security of IT systems. One reason why in Romania the usage rate of Internet banking is very low (5%) is due to these risks. The risk arises because of the need to develop and implement banking services in a relatively short time, under the pressure of fierce competition in the banking system, and these institutions do not allocate the time needed to test them.

Other reasons for which the rate of use of Internet banking is very low are: Internet access, general level of education in a country (especially in rural areas and among elderly people). On the other hand Romania has one of the fastest Internet speeds in Europe.

In future researches it will be of interest to identify and analyse the factors that influence the evolution of the Internet banking in Romania through a multiple regression analysis.

6. Bibliography

[2] Chang Z. T., Dynamics of Banking Technology Adoption: An Application to Internet Banking, Department of Economics, Workshop Presentation, University of Warwick, Coventry, UK, 2003;