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THE IMPACT OF INTERNET TECHNOLOGY ON THE ROMANIAN BANKS PERFORMANCE

Abstract:

In the last decades the Internet technology era has developed increasingly more and currently it spans the whole business world. Nowadays no manager can conceive the existence of a successful business without its existence in the online environment. Therefore, more and more companies have moved a part of their activities on the Internet in recent years. This fact helps them to become more popular and to attract more customers. So, for the business world, it is well-known that a respectable company should have a website.

Banks are also involved in this process. The information technology and communication revolution has affected the financial services, too. The majority of banks have websites today. Here they communicate with the public and carry out certain activities with clients so that they no longer have to go to the bank. But how does the Internet influence the performance of a bank? Since it is about a revolution in this field, it is expected that banks' performance to increase. The presence of a bank on the Internet through a website, the Internet banking and any other activities undertaken by the bank in the online environment such as online advertising should improve its financial results. Even if the bank spends more resources in this regard, it is expected that more customers to be attracted and that operations made by banks' employees to be replaced with this kind of technology. This paper examines this issue in the case of Romanian banking industry starting with 2005. How has the Internet technology affect the performance of a bank in terms of ROE? Have the banks benefit from this kind of technology revolution or the costs of these service affects their results since the users of this technology is lower than the developed countries?

Keywords:

Electornic banking, banks' performance, Internet banking

JEL Classification: G21, G29, G30

1. Introduction

The reason for this topic usefulness is that the Internet age has grown increasingly more in the recent years, reaching to include the entire business world today. Nowadays there are few successful businesses that are not present in the online environment through a website. Also, no manager of a top company can conceive developing its business without its extension in the virtual environment.

Nowadays, the Internet includes almost all types of activities carried out by human beings and it aims to relief their efforts in daily work. What is happening now globally is the migration of firms' activities in online environment. This does not imply the disappearance of the common economic activities. Most often, the two occur concomitantly and are complementary. It is even considered that not having a website is equivalent to the firm's non-existence. However, online environment supports firms to build a reputation and to attract new customers. Consequently, this is a new delivery channel. All these issues are also valid for credit institutions. They offer many types of services, such as: online credit card applications, online loan application, online savings account application, fund transfer, online bill payment. The bank needs to invest in new technology in order to deliver such services, but it is expected the performance to grow. For customers is comfortable to make their operations from home just using a computer. Hence, everyone win.

In the future, it is expected that more services delivered by the bank to be replaced with virtual activity. So, the costs with labor and branches will decrease which leads to an increase in financial performance.

2. Literature review

Despite of its importance, the relationship between Internet and banking performance is very poor studied in the literature. Most of the works from this area are considering just the Internet banking issue as a representative variable for Internet. Currently, existing studies often contradict on the effects on banks' financial results of Internet banking. Thus, some authors argue that Internet banking banks do not benefit in terms of results, while others have concluded that there are clear positive effects. It is surprising that they found even negative effects, which is due to costs incurred for the implementation of this kind of technology. An analysis made on the literature addressing this issue, it can be said that the relationship between Internet and banking performance depends very much on the development of a country and, implicitly, of the banking system. Another difference consists of the dependent variables that are used by each author depending on the own view of importance or on the previous literature.

One of the very first studies considered the USA banking system (Sullivan, R. J., 2000), decided to use risk, overhead ratio, and total loans to total assets ratio as

independent variables and concluded that the Internet has no effect on banking financial performance. This means that there is no difference in terms of financial results between banks that were using Internet Banking and banks that were not using Internet Banking. Another study made on Spanish banking system (Hernando, I., Nieto, M. J., 2006) took into consideration the number of bank's branches, loans, deposits, trading portfolio and decided that the Internet banking has a positive impact on performance. A work analyzing Turkey (Ozsoz, E., Helvacioğlu, A. D., 2008) used GDP per capita, lending rate, deposits to assets ratio, loans to assets ratio, and an indicator for bank crisis as explanatory variables and concluded that there is, as seen in the previous case, a positive impact on performance. Recent studies made on Jordanian banks showed that there is a negative impact if independent variables are size, capital, credit risk, expenses and liquidity (Al-Smadi, M. O., Al-Wabel, S. A., 2011) and there is no significant effect if independent variables are lending rate, total deposits to total assets ratio, overhead ratio, market share, loan to assets ratio (Khrawish, H. A., Al-Sa'di, N. M., 2011). A more recent study having in view the banks in Kenya (Kingoo, N., Aduda, J., 2012) used investments in e-banking, number of ATMs and number of debit cards issued to customers to show that the Internet Banking is improving bank's performance. Also, a very recent study developing a model for Asian countries (Hosein, S. S. M., 2013) concluded that there is no difference between banks using Internet Banking and banks without Internet Banking taking into account GDP, lending rate, total deposits to total assets ratio, and total loans to total assets ratio as explanatory variables.

Then, it is obvious that almost half of works support the idea that there is, as expected, a positive impact of Internet on banking performance. The other half of studies considers that the Internet does not influence banks' performance. Usually, the positive impact is met by the developed countries where the number of Internet users who use the Internet for banking activities is high. The neutral aspect is met by both developed and emerging countries.

Few authors also consider that the Internet has a negative impact on bank's financial performance. Even it is expected that financial performance to increase, it is possible that the opposite to happen. Internet banking is a revolutionary technology designed to come to the aid of both the bank and the client, but requires some costs. If the number of customers who use the advantages of the new technology is not high enough, then the bank cannot cover its cost generated by this service deployment. As a result, profits will decrease. This could be the case of emerging markets.

Regarding the dependent variable, there is not a consistence in the literature. Some authors prefer ROE, some both ROE and ROA, and some of them just ROA. Financial intermediation margin is also took into consideration is some works.

3. Methodology

This paper examines the impact of the Internet technology on the Romanian banks' performance. In order to achieve this objective, an econometric model has been developed. The panel data collected consists of 11 banks (out of 40 available) analyzed between 2003 and 2013. The sources for the information used are the financial reports, balance sheets and the profit-and-loss statements.

As soon as in the literature there is a consensus regarding the best way to express the performance, which is the return on equity, for this model ROE has been chosen as dependent variable. As explanatory variables, the model uses just internal factors since the aim is to find out the effect on performance of what is inside a bank. The Internet factor is also an internal one since it is up to any bank to adopt it or not. Hence, having as starting point the model developed by Al-Smadi, M. O. and Al-Wabel, S. A. (2011) for Jordanian banks, the independent variables that have been chosen are as follows: size, capital on assets, liquidity ratio, number of employees, number of branches and three variables for expressing the Internet. These last three are the number of Internet banking users, the year when Internet banking was implemented and the online advertising.

Size is calculated as total assets. In the literature it is considered that banks with a high value for assets have a high value for financial results, too. So, as Al-Smadi, M. O. and Al-Wabel, S. A. (2011) said, it is expected that ROE to evolve in the same direction as size.

Capital on assets is the ratio between equity and total assets. Al-Smadi, M. O. and Al-Wabel, S. A. (2011) also said that the higher this ratio value is, the better the financial situation for the bank since capital adequacy helps it to survive.

Liquidity ratio, as Al-Smadi, M. O. and Al-Wabel, S. A. (2011) had in view in their study, is total loans to total deposits. Generally, in the literature it is a consensus that the loans should not exceed the amount of deposits. So, it is suitable for a bank when the liquidity ratio is under 1. In relationship with ROE, if this ratio increases, it is expected that performance to go down.

The number of employees is expected to affect ROE positively. The more the labor force is, the higher the profits. The number of branches is also expected to have a positive impact as a large area of activity means more customers.

The variables which measure Internet are the number of Internet banking users, the year when Internet banking was implemented and the online advertising. The first one is expected to have a positive impact on performance as the bank makes money from delivering services to them and also reduces the costs with labor and branches (the number of these can be adjusted). The year of implementing Internet banking is a dummy variable which equals to one if the bank adopted this technology before 2007 and zero

otherwise. It is expected that banks having this service active before 2007 to have a higher value of ROE. Online advertising is also a dummy variable which is one if it was available in a specific year an online advertising for the bank and zero otherwise. It is expected that the publicity to have a positive impact on performance.

Then, the model is as follows:

$$ROE = \alpha_0 + \alpha_1 * SZE + \alpha_2 * CPA + \alpha_3 * EMP + \alpha_4 * UNT + \alpha_5 * IBY + \alpha_6 * IBUS + \alpha_7 * PON + \alpha_8 * LIQ,$$

where SZE is size, CPA is capital to assets ratio, EMP is the number of employees, UNT is number of bank units, IBY is the year when Internet banking was implemented, IBUS is the users of Internet banking, PON is online advertising and LIQ is liquidity.

Tabel 1: Estimation results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPA	0.133318	0.041860	3.184874	0.0019
EMP	2.002861	1.348322	1.485447	0.0402
IBUS	1.680553	0.189098	3.598943	0.0005
IBY	10.16021	1.871820	5.427983	0.0000
LIQ	0.73511	1.23E-10	0.598392	0.0408
PON	3.873085	1.801896	1.594479	0.0136
SZE	-1.783255	0.989751	-1.801721	0.0443
UNT	2.854834	1.673851	0.510699	0.0106
C	9.46972	10.43376	1.516419	0.0322

The coefficients' estimating leads to the formula:

$$ROE = 9.46972 - 1.783255 * SZE + 0.133318 * CPA + 2.002861 * EMP + 2.854834 * UNT + 10.16021 * IBY + 1.680553 * IBUS + 3.873085 * PON + 0.73511 * LIQ$$

From the results shown above it can be seen that the significance level of 5% is met. The value of ROE that cannot be explained by the considered factors is 9.47. Further, it can be seen that size seems to have an evolution in the opposite direction as ROE, fact that could be determined by the costs generated when a bank is too large, assuming the theory that a large bank has higher costs than a small one. Anyway, the value of the coefficient is not very high: 1.78. So, it is about a 1.78% effect on performance. The capital to assets ratio has a positive impact on ROE, as expected. If this ratio increase with one percent, than ROE goes up with 0.13% which is very low. It is almost like there is no effect on performance. Anyway, the positive impact happens because of the own money that helps the bank to improve its financial results. The number of employees, as expected, evolves in the same way as ROE. If the number of employees increase with one percent, than ROE goes up with 2%, which is quite an

important impact. The number of units has also an impact on ROE. Hence, if the number of branches goes up with one percent, than the performance goes up with 2.85%. The positive effect has been also expected. Further, the year when Internet banking has been adopted registers a huge impact on performance. The banks that implemented it before 2007 have an advantage of 10.16% over others. The sign has also been expected. If the number of Internet banking users increases with one percent, that ROE grows with 1.68% which is not a very important impact due to the fact that in Romania the number of this service users is still low compared to developed countries. Online advertisement has also a positive impact, but not so significant as expected - the banks that have an available advertising register an increase of 3.87% in performance. Finally, as expected, the liquidity has a negative impact. So, if banks give more loans and, as a result, the ratio grows (with one percent), than ROE decreases with 0.73%.

Because the validity of the model is needed, the indicators in the table below are obtained.

Tabel 2: Validity of the model

R-squared	0.400862
Adjusted R-squared	0.358066
S.E. of regression	6.296540
F-statistic	9.366896
Prob(F-statistic)	0.000000
Durbin-Watson stat	1.906759

Because the probability of F-statistic is less than 0.05, the model fits in the limits of confidence level. This means that the model is valid with a 95% probability. The ratio of determination Adjusted R-squared shows that 35.8% of the variance in units of the return on equity is explained by the factors taken into account. The value for Durbin-Watson is 1.9067 which means that the errors are not correlated.

4. Conclusions and future research directions

It is clear that the Internet revolution bring advantages to everyone implied – banks and customers. The banks can reduce the costs with labor and branches and automation their activities. Customers can reduce the time spent on banking activities and maybe some money. Although these are some evident advantages, it cannot be drawn a conclusion that using Internet in their activities, banks are more profitable.

The findings of the model developed earlier show that the year of Internet banking implementing has a very important impact on return on equity. It seems that the early adopters banks are significant more profitable. The Internet banking users have also a positive impact on performance, but not very high since in Romania the number of users is quite low. The online advertising has also a positive effect on performance. Even

it is not so important, there is a difference between banks having an available advertising and banks not having an available advertising. So, it is clear that the three variables measuring the Internet have a positive impact on performance. However, this impact is still too low (especially for online advertising and the number of Internet banking users) to draw the conclusion that the Internet has a significant impact on performance. So, it can be concluded that for the Romanian banks the impact of this technology is neutral. This result is similar with the one obtained by Khrawish, H. A., Al-Sa'di, N. M. (2011) on Jordanian banks and by Hosein, S. S. M. (2013) on Assian countries.

For a more concluding study, a larger sample is needed. Also, a comparison between countries could help to find out from where are coming the differences in the literature. It is clear that the results of such a model depend on the level of development of a country. Hence, studies on more countries with the same level of development are needed. Regarding the variables used, the model needs more Internet variables to explain better the technology revolution. Moreover, more micro and macroeconomic variables should be taken into account.

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