

TECHNOLOGIES AND INNOVATION IN THE MANAGEMENT OF THE BANKING SECTOR

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Abstract. *The financial services industry has changed in the last few years: it is more dynamic, focused on innovation and developing new technologies. Therefore, the transition from traditional banking to digital banking is faster than specialists thought it would be. Living in a world where globalization is forcing all the industries to adapt to a computer-based solution, banks are moving their activity online and delivering value-added services to their customers but also protect their data and make them feel secure. In order to emphasize the importance of new technologies in the banking sector, we will be analyzing existing data and will use theoretical perspective to explain the observed behavior of clients – from product to customer orientation. It is important to find the best solutions for the banking system in Romania to change the client behavior regarding the “digital revolution”. Based on statistics, the work brings forward the online banking penetration in Romania from 2006 to 2017. The paper defines the digital single market, which became one of the big priorities of the European Union. Its purpose is to bring down the barriers and unlock the online opportunities. The EU regulations, applicable in all the member states, aim for secure sourcing of banking services by using online/electronic platforms. What the EU wants, is to create a better digitalization of the banking system. Nevertheless, statistics show that both the banks and the clients showed their interest in using online banking products. The study presents the evolution of digital banking in Romania, top online services used by Romanians: online accounts, online loans, virtual payments, mobile banking.*

Keywords: *banking; digitalization; innovation; new technologies; finance.*

Introduction

The rapid evolution of technology is changing structurally the financial-banking services industry. We already live in a digital world and we cannot conceive of our life without a smartphone, tablet, laptop or smartphone, without a digital agenda, electronic wallet, electronic ticket or e-book. According to Kotler (1973), “one of the mixed blessings of

human history is that man increasingly lives, works, and plays in artificial environments.”

The traditional business model and classic bank branch are rethought. Banks focus on customer requirements, competition is on the rise, new financial services providers are emerging on the market, who show agility and are able to respond quickly to customer requirements, therefore creating an artificial environment based on digitalization. Banks need to be prepared to accept that digitization is everywhere, and the consumer is the one around whom gravity is or should be gravitating. The new technologies we are talking about today have real chances to cause major changes in financial institutions, but also to support the process of adapting them to new trends. Internet banking has gone quickly from being an exotic banking technology to a feature one expects to find at a commercial bank (DeYoung, Lang & Nolle, 2007).

It has been pointed out that mobile banking is a powerful new marketing and CRM tool for financial services companies (Sinisalo et al., 2007). A study made by ChauShen Chen (2013) shows that mobile banking users with different behavioral patterns have dissimilar perceptions of innovation benefits and risk.

It is already impossible to imagine our society without internet or mobile phones. Whether we like it or not, they have become part of our lives, they have become normality. Depending on the banks' response to the challenges posed by new technologies, this normality can become a threat or an opportunity. Moreover, the development of mobile commerce and mobile banking in different countries is significantly different (Zhang, Zhu & Liu, 2012). Shaping the future of banking and continuing with a brief analysis of the Romanians behavior regarding the online banking, the study is trying to create a picture of the future in banking.

Shaping the future of banking

Statistics show that consumers prefer more and more digital banking than traditional banking. The technology changes everything. Banks are forced to offer more value to their clients by creating innovations, applications, platforms and faster services. The economic analysts believe that it is a matter of time until the young generation, often called the millennials, will impose their requests in the banking industry. Innovating continuously in financial services influence the scope of financial intermediation and the nature of competition between intermediaries (Nickerson & Sullivan, 2003).

Going digital, clients have quick access to a debit card, without physically going to the bank. Moreover, more accounts can be attached to a single card, in more currencies. The digital nomads have developed secured desktop and mobile applications, digital signatures, instant online money transfers, geographic independence. Specialists believe that the traditional approach of banking should provide better infrastructure and invest in employers' education. Therefore, it is not an effective tool to reach millions of persons, especially those that do not live in main cities.

According to the research made by Mercury Research that involved 1000 subjects, 85% of them would prefer to interact with their bank employees through online video calls from home or in a branch, 84% of phone calls, or have virtual chat assistants (80%). The study attests that Romanians want to interact with banks through modern

communications channels based on new technologies. The Romanians' expectations, from their relationship with the banks, are the increase of employees' competence level and the attention paid to the relationship with the clients, followed by the improvement of the quality of the services. In the relationship with banks, customers want fast and simple support services, because they do not have the time and patience to wait in the physical offices, but they want a personal and trustworthy relationship with the bank. The banks of the future are those who will make the most of the technology to meet such requirements. Online video calls offer the opportunity to strengthen the personal relationship between clients and bank counselors as an easy alternative to direct human contact, benefiting the optimization of time and resources allocated to this.

According to a new MasterCard study (2017), conducted in 11 European countries, six out of 10 consumers welcome digital solutions, and I think digitalization of the banking industry makes their lives easier and safer. The study, conducted among European bank customers, shows that comfort is by far the most representative advantage of digital banking solutions, followed by time savings (70%) and ease of use (59%). The banks of the future are the ones who will make the most of the technology. The study attests that Romanians want to interact with banks through modern communications channels based on new technologies.

The MasterCard study (2017) also demonstrates that clients' loyalty to their current bank is relatively low: almost half of the consumers in Europe (49%) say they will consider switching to a digital bank at some point. In Germany, in particular, consumers show low loyalty: 27% of them plan to leave their current bank in the next 12 months, which is by far the highest rate in Europe. At the same time, the Dutch are the most loyal customers. Only 7% of them say they are considering changing their bank, and 52% want to stay with their bank.

In addition, European consumers believe that the digitization process in the financial sector will affect banks' branches. Two-thirds believe that the branches of banking institutions will continue to exist in the next ten years, but their number will drop, while 6% are convinced that they will cease to exist within ten years.

Evolution of digital banking in Romania

51% of Europeans aged between 16 and 74 years old used Internet banking services in 2017, a double percentage since 2007 when just 25% used this new technology. Taking a deeper look, Romania is on the penultimate spot in the European Union when we refer to the use of Internet Banking, with only 7% of the Romanian population using internet banking last year, according to data published by Eurostat. Only Bulgarians are positioned behind Romania, with only 5% of users. According to the report, only 24% of Europeans with secondary education use the service, the percentage rising to 77% for those with higher education. The penetration rate of Internet banking, as shown in the figure below, describes the top users of Internet banking in Europe: In Denmark, 90% of adults used Internet banking services in 2017, next, Norway (89% of citizens aged 16-74) followed by Finland (87%), Sweden (86%) and Estonia (79%).

However, between 2007 and 2017, the share of Internet banking has doubled in the EU from 25% to 51%, while in Romania it has tripled from 2% in 2007 to 7% in 2017. There is an appetite for going digital in our country as the statistics show, but going digital

doesn't mean eliminating the traditional banking. The statistics may be influenced by the social factor Social influence is defined by Venkatesh et al. (2003) as "the degree to which an individual perceives social influence important and believe he or she should use the new system".

In Romania, there are many categories of customers and we have to admit that not everyone is ready for digital services. Romania has many potential non-banking customers and it is hard to believe that our country will go directly from nonbanking to digital banking. What Romania needs, it is a period of time in which the two concepts will coexist. There are clients who have an increased appetite for digital financial services, but there are still many people who follow traditional banking. The clients want to come back to the bank to stand up with a counselor. Romania is still "a cash country", and customers who prefer this option need to be served.

The banks in our country strive to keep up with the technology and also allocate important resources to financial education projects, bringing Romanians closer to the digital banking concept. The approach of the local banking business on the idea of total digitization of financial-banking services is not yet a solution for the Romanian market, as there is a small mass of clients and potential clients receptive to the new technologies.

In the short term, digital banking is a priority investment in Romania. In the long run, this approach can become a revenue generator, but it depends on the customer segment that is targeted. However, we have to be aware that on the local market we will have a long period of time while we will still combine traditional banking with digital banking. Banks cannot give up on traditional banking unless they are in a market niche, which is currently quite small and cannot generate revenue to cover the huge investments. The concept of "open banking", promoted by the European directives on digitization, generates the possibility to apply other business models on the Romanian banking market and can greatly help in the new customer acquisition area.

I believe that traditional banking and digital banking will fight for a supremacy on the Romanian Banking market, but they can both survive and there is enough place for both concepts, but still, digitalization represents the future.

Online services in Romania

This statistic in figure 1 shows the online banking penetration in Romania from 2006 to 2016. In 2016, five percent of all individuals used the internet for online banking, but usage was higher among those who had used the internet within the last three months, at eight percent. Taking a look at the numbers we can say that Romanians use the new technologies more and more. Moreover, the banks in Romania have changed their strategy and invested in the online services.

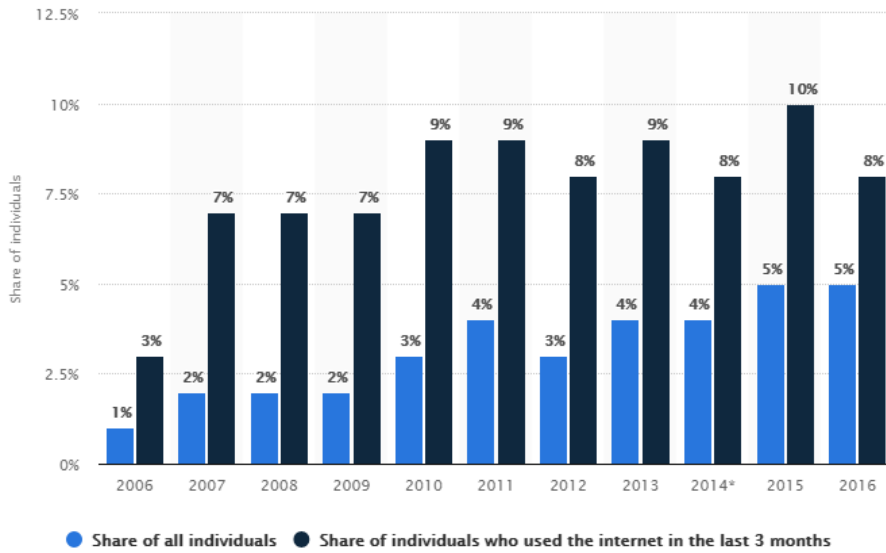


Figure 1. Online penetration in Romania from 2006 to 2016 (Statista, 2018)

All the local banks used their strengths especially in digitization lately. The table below presents a short comparison of the top banks in Romania when talking about the new technologies: internet banking and mobile banking users.

Table 1. Comparison of internet banking applications of the top banks in Romania

BCR	BT BANK	BRD	RAIFFEISEN BANK	ING BANK
-150,000 users in 2016 - currently over 1 million digital clients, 17,800 POS, 2,500 ATMs, 41 cashless branches (according to a Facebook presentation in March 2018)	Approximately 16.8 million is the number of transactions made via BT24 Internet Banking, or over 3.5 million through Mobile Banking, up 16.8% and 126%, respectively, compared to the same period last year. - 350,000 mobile banking customers at the end of 2017, in February 2018 close to 400,000	- 1.4 million Internet / mobile banking contracts, up 21% (final 2017) - 2.33 million active clients - the number of transactions increased by 30% in 2017 and the number of connections by 45% - 460,000 final contracts for mobile banking application in 2017	- 470,000 users active in online banking applications in February 2018 (180,000 in 2016) - 2 million customers to 100,000 companies.	-Over 677,000 customers who have used the app in the past six months have accessed the account 29 million times the online services, 61% of them used the mobile application - has a 51% market share on Internet Banking

A mobile banking comparison between BCR and BT (table 2) shows that it is much easier to access the BT24 mobile application. BT 24 has several options, such as: changing card functions, paying for tax road fee, loading phone cards, receiving money Western Union, opening a new account in lei or other currency. In the table below it is emphasized that customers can use more features for the BT 24 than Touch 24 BCR.

Table 2. Comparison of mobile banking applications of BT Bank and BCR

Touch 24 (BCR)	BT 24 (BT)
<p>-has three logins: static, e-token, or token -password access plus user number</p> <p>Quick options: opening account money deposits pay barcode scanning bills exchange currency internal transfer payment to other IBAN accounts payment to personalized templates</p>	<p>-has only one login option, with the static password, consisting of 5 numbers</p> <p>Quick options: sends money to your personal account pays a bill of utility, and scanning elbows exchange money payment in national currency or other currency pay templates opening money deposits application for BT funds buy the plane ticket recharge your phone card receives Western Union money customer service – ask messages change cards limits temporary lock, lost, stolen cards activate messages alerts reset card pin</p>

Internet banking – a useful tool

Almost all banks offer this service to their customers when purchasing their debit card. Internet banking allows payment to merchants who have platforms developed for online sale.

The best-known feature that customers have access to is the payment of bills and taxes. There are some rules that, implemented, provide the guarantee of safe payments and which you can use to make savings.

How it works –As we mentioned before, banks include the Internet banking package in the services of a bank card. In the case of other banks, clients should make a request to the bank to obtain this service. Each bank designed a special internet page for internet banking where customers can always get access via a password. As a rule, the Internet banking subscription comes packaged with a token, a tool that generates a new password every time you log in, thus ensuring your transaction security. Some banks have given up this device, and every time they log in, with a standard login and

password, they send an SMS with a new password that will be used to access the internet banking service.

Safe Transactions - The problem that comes with the use of Internet banking services, which opens the way to numerous online payments, is that you expose yourself to all the dangers that are lurking on the internet. Cybercriminals can cause major damage from computer failure to accessing your bank account and stealing money from your account. Banking sites contain all the information you need to avoid these problems. The main advice from banks is not to provide card details to people who contact by email or telephone by pretending to be part of the bank's staff who need information shown on the debit or credit card. Also, using a firewall to stop unwanted access to computer data, using a secure browser, and keeping up-to-date, are some of the measures that can keep your computer and your bank account safe.

How to use the service to make savings - Payments to bills, merchant payments or money transfers to other accounts are the main facilities that this service provides. Basically, all of these transactions, which normally involve a bank transfer, can be done via internet banking in front of the computer. With the help of the service, the users will also have the exact records of all these expenses, access to the account statement, without going to the ATM, etc. An "expenses" x-ray will definitely help us eliminate the excess amounts spent.

Greater discounts or bonuses - Expense analysis is not the only way to save money. The same service provides customers with products that are cheaper in the online environment. As a result, banks are on a steady downward path, so they encourage customers to buy various products through internet banking to get rid of the costs of selling the same products in a branch (staffing and branch maintenance). Thus, most banks offer, for example, higher interest rates for open deposits through the internet banking service, and substantial commissions cuts that can even go to zero costs. The range of facilities goes far beyond these deals. For example, there are banks that have selected several partner retailers offering discounts on card purchases using the internet banking service.

Paying bills without costs - The facility that popularized the internet banking service is paying the bills by laying in front of the computer, so no need for that client to go to the vendor or the bank. Banks do not usually charge commissions for these payments, but that does not mean there is no cost. For example, if a vendor does not have an open bank account with the creditor who issued your card then you will need to pay the money from your account to the provider with an account with another bank. The transfer of money between two accounts opened at two different banks, involves the payment of an interchange fee. Instead, if the provider in question has an account with the same creditor who issued your card, there are banks that will not charge you any commission. Before you call the Internet Banking Service to pay your bills, it is advisable to make sure that the utility provider you pay for your bills has an account with your bank.

Payment of taxes - some banks have developed for the Internet banking service a tax payment application, which is usually free of charge. The few dozens of taxes and fees to be paid to the state budget have predefined sections on the internet banking website, the client only has to select the tax that must be paid and make the payment. In a hierarchy of the most time-consuming transactions in the life of the Romanians, the

payment of taxes is certainly the leading place. Through Internet banking, all this time can be saved. Also, internet banking can also be used to pay fines.

Mobile banking

Mobile banking is another useful tool that has been developed in the past few years and it makes it more interesting because of its great potential to “bring basic banking and electronic transactions services to unbanked consumers in developing markets” (Anderson, 2010). Ongoing advancements in smartphone technology, together with the emergence of a more demanding consumer, have created a new playing field for software providers. Mobile payments are a small but growing subset of the broader world of electronic payments (Porteous, 2006).

Focusing on the most common mobile banking activities, such as account balances (representing close to 50% of usage), transaction history and domestic transfers, the mobile application should be built with easy accessibility and user-friendliness at its absolute core. The application should try to provide quicker access to the most-used functions of digital banking, like balances, account history or domestic payments. That also means easier authentication and putting the favorite functions out in front of the customer as clearly as possible. The most striking quality is its high level of customization, appreciative of the fact that different customers have different needs. Based on a widget concept, each user is availed of a personal dashboard, as well as a ‘comfort zone’ screen, in which instant balance and account information is provided without the need to log in. It should be simple, relevant, accessible at any time and personal.

Complete package for financial institutions, the app also must provide the perfect platform to cross-sell additional services. Together with the inbuilt geo-location features on many of today’s smartphones, adverts, promotions and push notifications are triggered in direct correspondence to the account activities and financial profiles of respective users. The end-to-end sales process also includes providing customers with offer widgets on their dashboard, application forms, and call-back requests. However, such messages are based on using specific customer data and are not a means of bombarding banking customers with arbitrary – and often unwanted – adverts. The application should be smart: monitors how the customer does things, and then it learns from these actions, promoting them immediately if they need credit.

For banks, these applications are helping them to communicate more effectively and more relevantly. So, it’s not about hitting the customer with a lot of sales messages but using the knowledge of the customer insight gained through categorization to put out messages that are relevant. As previously mentioned, customers, on the whole, still use applications for checking their account balances, but peer-to-peer (P2P) is becoming a more popular mode of mobile payment, particularly among the younger generation. Attuned to such industry trends, it comes as no surprise that the application may also include a P2P money request gadget, through which payments can be made by email, SMS, and Facebook. In addition, users can collect money from external customers via the likes of PayPal, Pay-by-Link and SEPA. Such functions can also come in handy when splitting the bill between friends at a restaurant for example.

We can conclude that a mobile bank service can create stronger relationships with the existing ones between financial institutions and clients (Riquelme & Rios, 2010).

Digital single market - a priority for the European Union

In a growing digital environment, the Digital Single Market (PUD) has become one of the European Union's (EU) priorities. An essential step towards the PUD, Regulation (EU) 910/2014 on electronic identification and trust services for e-commerce transactions in the Internal Market (eIDAS Regulation) aimed at providing a "common foundation for secure electronic interaction between citizens, businesses and public authorities, thereby enhancing the effectiveness of public and private online services, of e-business and e-commerce "in the EU. According to this regulation, electronic identification and trust services - namely electronic signatures and seals, time stamps, electronic distribution services and internet site authentication services - are intended to benefit from the EU single market, ensuring uniform legal treatment in within the EU, by giving the electronically signed documents the same legal effects as paper documents with handwritten signature.

The eIDAS Regulation specifies that the legal effects of an electronic signature (irrespective of its category) and its admissibility as evidence in court cannot be denied only because it is in electronic form or because it does not fully comply with the requirements for qualified electronic signatures. The eIDAS regulation also provides that qualified electronic signatures have the legal effects of handwritten signatures. In addition, qualified electronic signatures based on qualified certificates issued by a Member State are recognized as such in all other Member States.

Based on the provisions of the eIDAS Regulation (applicable directly in all Member States and prevailing over any conflicting national law against it) and the Romanian legislation on distance contracts, credit institutions in Romania have the legal possibility to provide certain banking services through online/electronic platforms.

Based on the eIDAS Regulation, trusted service providers such as Cryptomathic, IDnow, Connective, DocuSign, and Adobe offer digital solutions that can be integrated into a bank's online platform and allow customers to apply advanced and/or qualified electronic signatures. Some EU credit institutions have already deployed solutions for the use of electronic signatures and seals for both natural and legal customers. These services complement the usual facilities of internet / online banking platforms, allowing customers to access online banking exclusively without the need to be physically present at the bank's counters.

Conclusions

Innovative solutions and applications are a priority on each bank's agenda. Whether we are talking about cards, online payments, intelligent ATMs, Internet Banking or Mobile Banking, new technologies increase the interaction of banks with customers, improve the performance of credit institutions and ease the lives of their users. Banks should focus on using the Internet's unique characteristics and capabilities to make their websites more reliable (Calisir & Gumussoy, 2008). The banks of the future are the ones who will bring out the best of the technology. The main reason is that customers want

to have quick access to services and information to avoid bureaucracy at banks' headquarters, using services based on new generation technologies.

The studies and research reveal that innovation attracts new customers. Transactional Internet banking is both a product innovation and a process innovation. (DeYoung, Lang & Nolle, 2007). Nevertheless, banks should adapt to the new technologies and include them in their present strategy.

All in all, the Digital Single Market that the EU is focused on, creates possibilities of further digitization of the EU banking system. From our information, there is interest both from banks and customers to access online banking products. The involvement of entrepreneurs in the field of financial technology and the alternatives that financial technology companies can offer to the traditional banking system can also stimulate banks to adopt such new technologies.

Adopting new technologies involves complex security and risk management requirements, alongside efforts to implement new European regulations. Banks focus on customer requirements, competition is on the rise, new financial service providers are emerging on the market, showing agility and being able to respond quickly to customer requirements. Modern banks have self-service areas, private areas where customized information can be provided to customers and provide customers with electronic tools, Internet and mobile access, electronic signature, and automated electronic processing of internal and external processes.

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