THE IMPACT OF APPLYING NEW TECHNOLOGIES TO THE DEVELOPMENT OF MODERN BANKING

Dijana Grahovac[1]
Senad Softić[2]

DOI: https://doi.org/10.31410/EMAN.2019.607

Abstract: *With the development of new technologies and sort of technological revolution, every business has experienced a transformation, in terms of the need to introduce new technologies, in order to achieve the highest level of competitiveness in the changed conditions of the present time, in the era of globalization. Banking is one of the areas that has experienced significant changes in the way of doing business for the last decade through the digitalization process. New business models with clients have been developed, as well as new products, which modern technology allows. The paper presents differences between the modern and traditional banking, which were created by the introduction of modern technologies in this field, as well as some negative effects of such trends, which are primarily reflected in the reduction of the number of employees in this field.*

Keywords: *modern technologies, digitalization, modern banking vs. traditional banking, employee reduction.*

1. INTRODUCTION

Innovation and technological development within the banking sector over the past decades has been based on achievements in the development of information and communication technologies[3]. During this period, new technologies have been developed and implemented thus contributing to the globalization of financial flows and the development of financial institutions and financial markets. The application of new technologies has enabled the development of new products and services and a change in the structure and size of demand in the market of banking products and services. At the same time, there is an increased pressure on banks to increase their own efficiency in order to increase profitability and survival in the market. Modern clients can very fast get important data at low cost and easily compare which bank institution offers them the best conditions (products and services)[4]. It's hard to imagine there was once a time when all banking was conducted at actual brick-and-mortar financial institutions. Even the simple task of checking your account balance used to require a trip to the bank. Today, you can check your account balance, send money, withdraw cash, transfer funds and more - right from your smartphone, computer or tablet[5].

1 Central Bank of Bosnia and Herzegovina, University of Business Studies Banja Luka, Bosnia and Herzegovina

2 Central Bank of Bosnia and Herzegovina, Faculty of Economics, Sarajevo, Bosnia and Herzegovina

3 Mols, N. P., The Internet and banks' strategic distribution channel decisions", *International Journal of Bank Marketing*, (17), 6, 1999, p 295-300.

4 Panian, Ž., *Internet i malo poduzetništvo*, Informator, Zagreb, 2000.

5 Sarreal, R., History of Online Banking: How Internet Banking Went Mainstream, https://www.gobankingrates.om/banking/banks/history-online-banking/

2. CONTEMPORARY VS. TRADITIONAL BANKING

Traditional banking is characterised by decentralisation and a wide network of branch offices offering products and services[6]. A wide network of branch offices secured them an increase in market share. Such performance enabled them to offer homogeneous products in a large number of places, but also created the need for a significant workforce, i.e. number of employees. At the same time, the „incoming" costs for new banking service providers were high, which kept them from growing competition and led to the creation of an oligopolistic market structure in banking. For clients, this meant that they had to adapt to the bank, and not vice versa, either when determining working hours, or when choosing products and services and prices (interest rates, fees, etc.).

Modern banking is characterised by a kind of centralisation that enables the application of new technologies.[7] The creation of more favorable conditions for the development of modern banking is also contributed by the fact that every day there is an increasing number of computer literate people, computerised jobs and the costs of providing new products and services are lower[8] (economy of scale), which enables a growing number of clients to use them.

The opportunities provided by new communication technologies have contributed to the development and offer of new products and services in the banking sector. The advantages provided for the banking sector by the application of new technologies can be listed as follows[9]:

- *Lowering costs*. Numerous studies have shown that the provision of services, such as, for example, cashless payments by some of the banking self-service methods, is cheaper than the one at the counter in a bank office[10].
- *Increase in market share*. Banks that introduced some of the banking self-services quickly attracted clients of banks that did not do it.
- *Mass communication*. The application of new technologies in self-service banking enables mass communication at very low cost (Internet).
- *Better communication with users*. New technologies enable the development of marketing activities through the web site in a cheaper and more efficient manner.
- *Innovation*. New technologies enable the introduction of new services and products of the banking sector. For example, to open a new account, the saver does not have to go to the bank during the working hours, but can do this personally using the Internet when it is most suitable.
- *Developing new activities*. Using new technologies, many banks also provided their clients with insurance and securities trading services, that were not offered by regular banks.

---

6 Reidenbach, R. E., Wiloson, T. C., McClung, G. W., Goeke, R. W. , The Value Driven Bank, New York: Irwin, Profesional Publishing, a Times Mirror Higher Education Group, Inc. Company, 1995.

7 Jayawardhena C., Foley, P., Changes in the banking sektor – the case of Internet banking in the UK, Internet Reserch: Electronic Networking Application and Policy, (10), 1, 2000, p 19-31.

8 According to the results of the 1996 survey, in the USA, the costs of distributing banking services to different distribution channels are as follows: in the office 1.07, with telebanking system 0.54, ATMs 0.27, credit card 0.10 and Internet banking system 0.01, all expressed in USD. These data were taken from the materials of the Banking Supervision Conference on „Electronic Banking Issues" from the lecture „Electronic Banking", Terese Rutledge, OCC, US Treasury, Warsaw, Poland, June 8, 2000. The economic and social policies of the state, although the profit of banks will grow.

9 Jayawardhena, C. et al. 2000.

10 The Economist, A Survey of Online Finance, May 2000.

On the other hand, the introduction of new technologies affects the personnel policy of banks. In modern banking conditions, employees with new knowledge and experience are required. More and more young people are employed, and on the other hand, middle-aged and older workers are to be laid off, since the competition, i.e. new technology, makes the banks to do so, by introducing a reduction in the number of required workers, especially those without new knowledge and skills[11].

In addition to the listed, it should be noted that an increasing number of new financial intermediaries are entering into jobs that were once traditionally banking jobs, thus strengthening competition within the banking sector[12].

3. CONTEMPORARY RELATIONS WITH CLIENTS AND PRODUCTS BASED ON DIGITALISATION

One of the new products and services that banks have introduced as a novelty enabled by new technologies is *home banking*, which enables users to perform cash transactions independently, via the computer network (new distribution channels), outside the time and space borders. The widest range of services are self-service banking ATMs, EFTPOS, ATM-Exchange offices, Telebanking, Home Banking, Internet Banking, SMS, Mpay and more[13].

Table 1: Advantages of self-service banking

Advantages	
Bank	Improved reputation in the market - a perception of a bank that is leading in the application of new technologies Reduction of transaction costs Better and faster responses to changes in the environment Greater market penetration - self-service banking can be accessed without space and time constraints Using the Internet to advertise / sell new financial products
A natural person client	Reduced costs of access to and use of banking services Increase of satisfaction for the time saving - transactions can be performed 24 hours a day, without physical arrival at the bank Speed of transactions Better fund management - each transaction is recorded in digital form and can be analysed before launching a new transaction
A legal entity client	Reduced costs of access to and use of banking services Fast and continuous access to information Increase of satisfaction for the time saving - transactions can be performed 24 hours a day, without physical arrival at the bank Speed of transactions Better fund management - each transaction is recorded in digital form and can be analysed before launching a new transaction

Source: Gurau, C., Online banking in transition economies: the implementation and development of online banking systems in Romania, The International Journal of Bank Marketing, (20), 6, 2002., p 285-296.

11 Wiesner Mijić, V., Otpuštanje na bankarski način "Operativa odlazi, menadžeri dolaze", Večernji list, 19.1.2005.

12 Tomašević Lišanin, M., *Bankarski marketing,* Informator, Zagreb, 1997.

13 Panian, Ž., Internet i malo poduzetništvo, Informator, Zagreb, 2000.

As Internet of Everything-enabled solutions create more personalized interactions, Digital Bank 4.0 will become a reality (see Figure 1). Through their omnichannel strategies (Digital Bank 3.0), banks have worked hard to make transactions more convenient and consistent. By developing IoE solutions that leverage video, mobility, and analytics, banks can make transactions so convenient and automated that they appear virtually invisible to the customer.

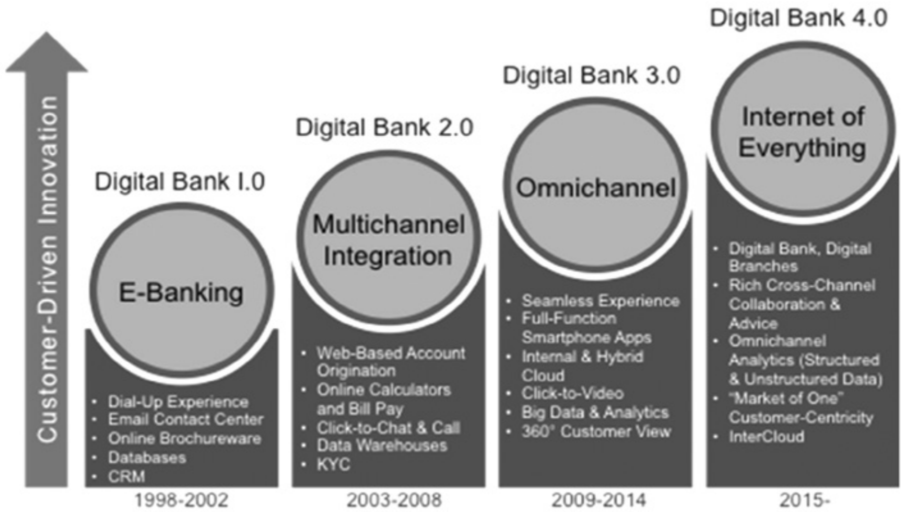


Figure 1: Interactive, personalized capabilities will enable "Digital Bank 4.0
Source: Cisco Consulting Services, 2014.

Chart 1 shows that online banking first became the most preferred banking method in 2009 with 25 per cent of customers naming it as their favorite. Previously, visiting a branch was the most popular method, followed by ATMs. The survey results show consumers have a clear preference for the speed and convenience that come with Internet and mobile banking.[14]

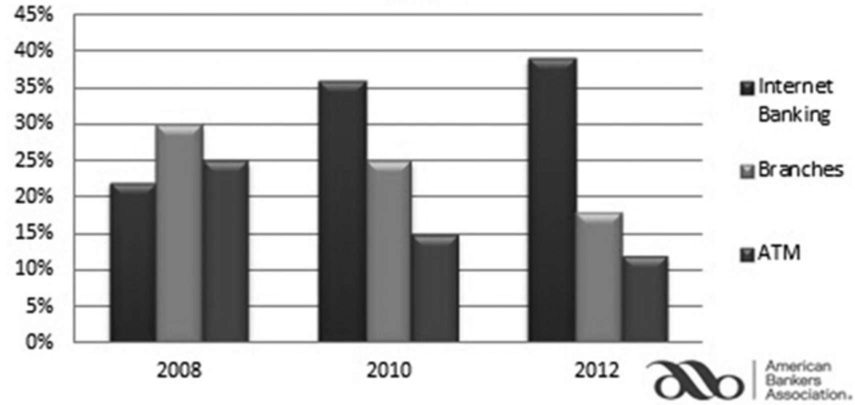


Chart 1: Preferred Banking method, all age groups
Source: Marous, J., As Online Banking Acceptance Grows Is Mobile Banking Reaching the Tipping Point With Millenials? 2012, https://bankinnovation.net/2012/10/as-online-banking-acceptance-grows-is-mobile-banking-reaching-the-tipping-point-with-millenials/

14 Marous, J., As Online Banking Acceptance Grows Is Mobile Banking Reaching the Tipping Point With Millenials? 2012, https://bankinnovation.net/2012/10/as-online-banking-acceptance-grows-is-mobile-banking-reaching-the-tipping-point-with-millenials/

4. PRACTICE

Digitisation in the banking sector brings banks a significant reduction in costs. From the figure 2 it can be seen that the reduced costs are not to be lost in the discussion of expanded offerings, enhanced functionality and the need for improved security, but that is the reality that growth in mobile banking has the potential to reduce costs of delivering services. As much as the growth in mobile banking use has resulted in incremental transactions (increased balance inquiries, more frequent money transfers, etc.), there is also an opportunity to reduce costs as well.

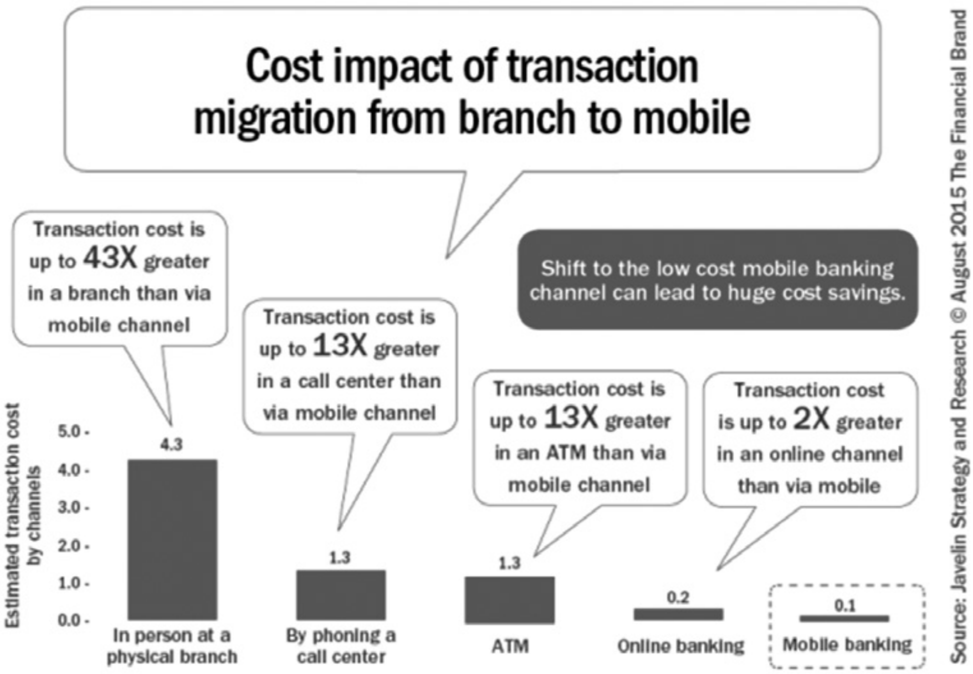


Figure 2: Cost of transaction migration

From Figure 3, there is a significantly higher number of visits to banking branches by 2012, when the trend is changing and the rapid increase in mobile banking participation is moving, in order to exceed visits to bank branches from 2015 and on.

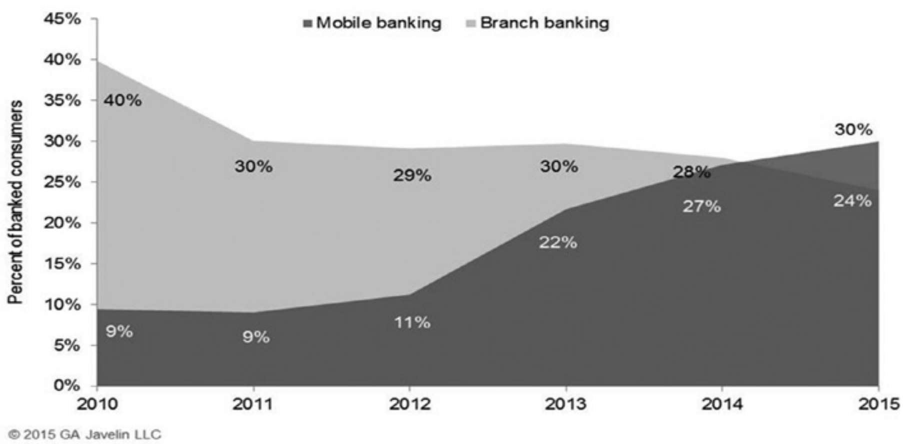
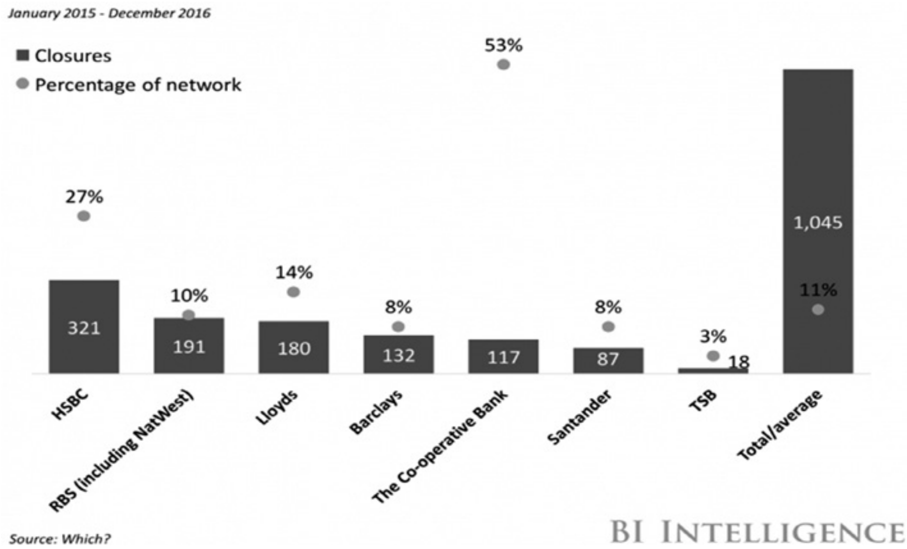


Figure 3: Mobile banking vs Branch Banking
Source: https://communityrising.kasasa.com/wp-content/uploads/sites/7/2018/05/mobile-banking-on-rise.jpg

As mentioned above, digitisation in the area of banking leads to a reduction in the number of branches and the number of employees. The graph 2 gives an overview of the number of closed branches in the Great Britain in the period 2015-2016 and a percentage in relation to the total number of branches. A total of 1045 branches or 11% were closed, and most were closed by HSBC.



Graph 2: Number of Bank Branches closures in Great Britain
Source: https://www.businessinsider.com/more-banks-are-closing-as-digital-banking-booms-2016-12

From 2007 to 2017, major insurance company Aviva reduced its workforce in Britain from 21000 to 15000, with Barclays bank cutting its British headcount from 103000 to 71000. HSBC bank went from 67000 to 43000, Lloyds banking from 140000 to 73000, Northern Rock bank from 6500 to 2500, RBS from 120000 to 65000 and Zurich from 10000 to 4000.[15]

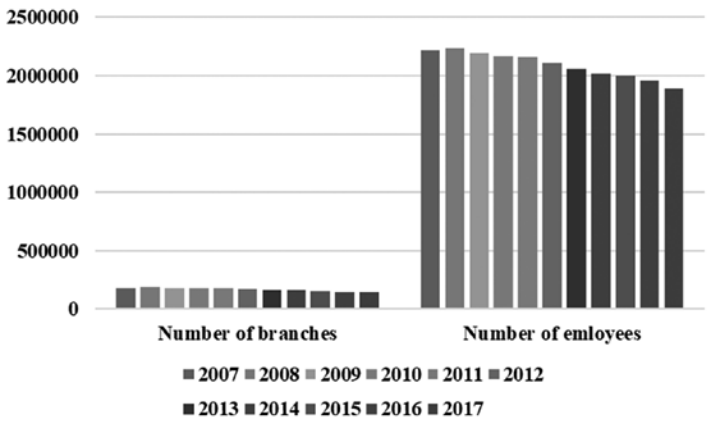
From 1995 until 2008, the growth of bank and thrift branches in the U.S. was unprecedented (and quite unwarranted based on branch transaction growth). In 2009, banks began to scale back on branch locations, decreasing by close to 5% annually through last year.[16]

The graph 3 shows the reduction in the number of branches and the number of employees in the banking sector of the euro zone, in the period 2007-2017. The number of branches is reduced by 22% and the number of employees by 15%.

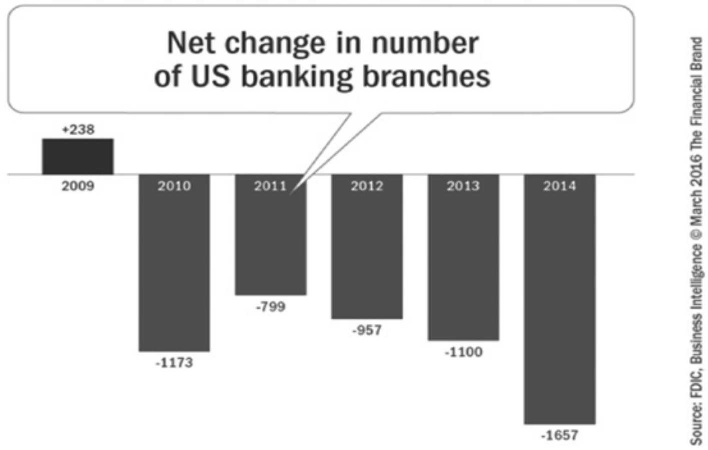
Generally, many financial services organisations respond to these changes, albeit very tentatively. Some banks have closed branch offices, while others have reduced branch departments. The result has been that the net change in US branches has remained negative for five years, and the rate of decline appears to be accelerating, according to FDIC and Business Intelligence statistics (Graph 4). In 2014, 1657 branches closed, marking the largest net decline in history, according to the FDIC. According to the Bureau of Labor Statistics (BLS), the number of tellers working at American banks will decline by as many as 40000 (7.7%) through 2024 (from 520000 today). While providing cost savings for banking organisations, these reductions are difficult for many banks and credit unions to make.

15 The Conversation, How finance workers are paying the price for the industry's profit, http://theconversation.com/how-finance-workers-are-paying-the-price-for-the-industrys-profit-83747

16 FDIC, Digital Banking Report, 2015. https://thefinancialbrand.com/wpcontent/uploads/2015/06/Total_number_of_us_bank_and_thrift_offices-565x408.png

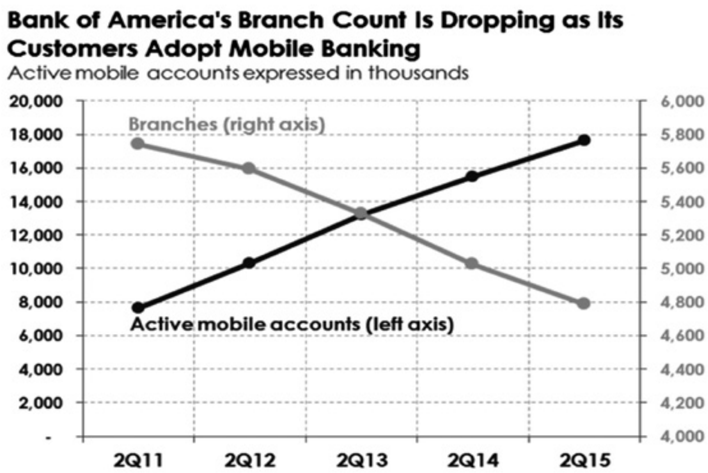


Graph 3: Number of branches and number of employees in banking sector of Euro area
Source: calculation of authors; data from Eurostat



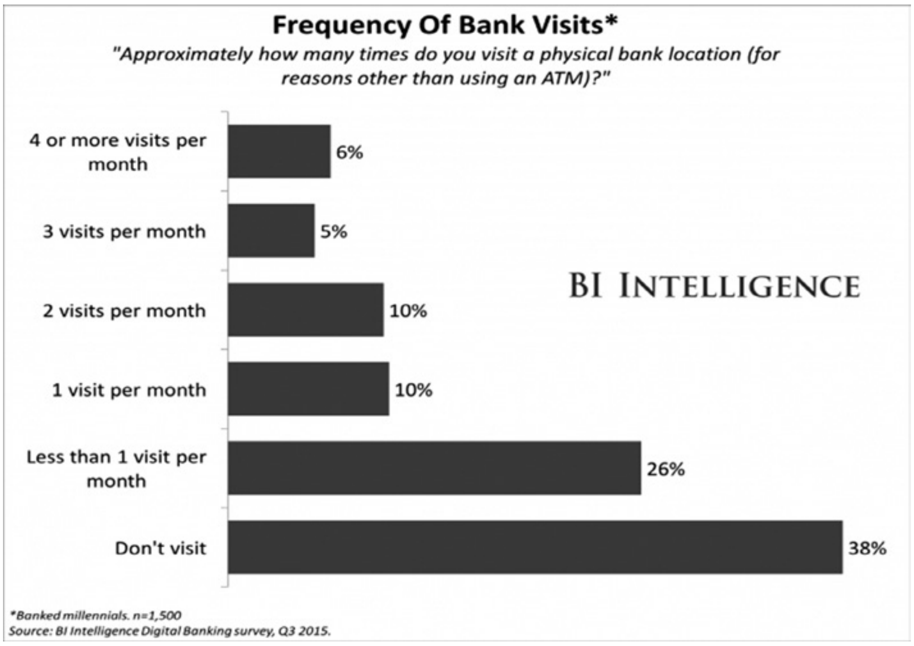
Graph 4: Net change in US banking branches

The graph 4 shows a significant drop in the number of branches in the period 2011-2015 in the Bank of America's, from 5800 to 4800, while Active Mobile accounts are growing from 8 million to 18 million, showing an increase of 125%.



Graph 4: Branches vs Active mobile accounts
Maxfield, J., Bank of America Is Closing Branches as Mobile App Users Grow, 2016, from http://www.fool.com/investing/general/2015/10/07/chart-bank-of-america-is-closing-branches-as-mobil.aspx

The graph 5 shows the frequency of Bank Visits of Citibank. The largest number of respondents said they did not visit the bank branches (38%), then - they were less than one visit per month (26%), while the remaining responses had significantly lower participation.



Graph 5: Citibank
Source: https://www.businessinsider.com/citibank-testing-beacon-technology-in-branches-2016-5

At first glance (figure 4), it might seem that in-lobby versus digital transactions are at near-parity in terms of preferred banking modes. After all, 39% of respondents said they'd rather interact with live bodies in a branch setting, which barely outnumbers the 36% who prefer banking via personal computer. But PCs are only part of the digital banking equation. Adding in the 14% who prefer banking via mobile and wearable devices (26% for Millennials) brings the number who prefer electronic banking in one form or another to a full 50%.

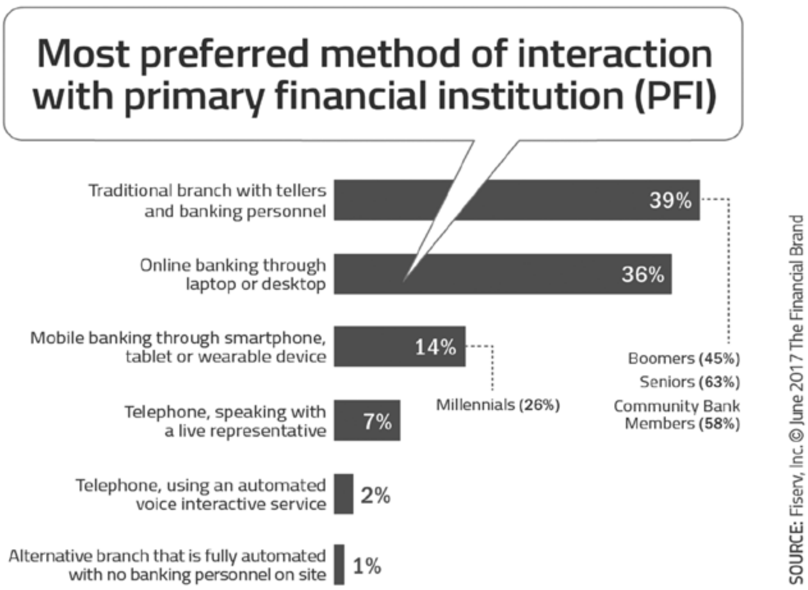


Figure 4: Most preferred method

From Figure 5 comes the conclusion that mobile banking experience is more important than branch experience. According to the structure until 2020, there will be a decline in the use of PCs, stable phones, as well as the number of branches, in the banking sector, and mobile banking will achieve a rapid growth from 86 million users in 2010 to 2341 billion users.

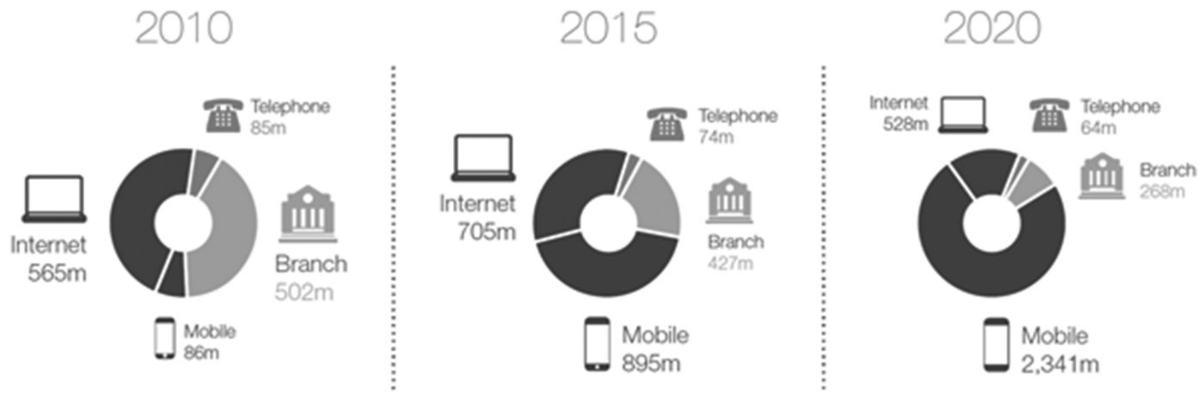
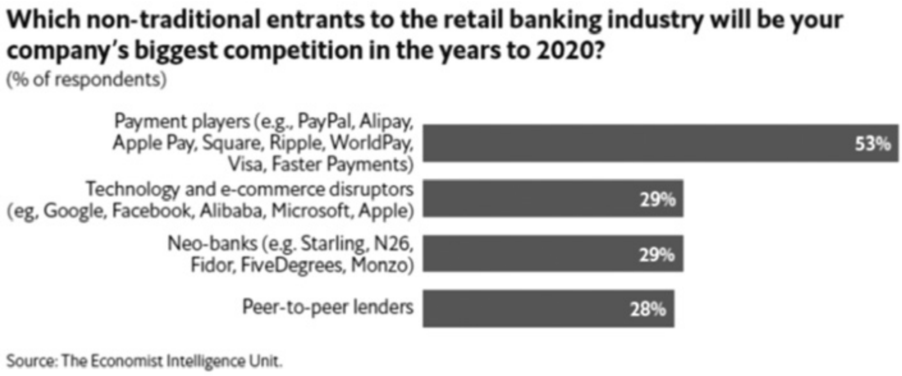


Figure 5: Mobile banking experience vs branch experience
Source: https://cuengage.com/is-your-digital-experience-one-you-are-proud of/
bba_graphic_3340032a/

Surprisingly, survey respondents appear to be more concerned about losing business to new payment players, including the threat posed by Google, Apple, Facebook and Amazon (collectively known as GAFA), than they are about ensuring that new payment frameworks are secure. As Graph 6 illustrates, 22% of respondents believe that data protection legislation will have the biggest impact on retail banks in the years to 2020, while 13% expect it will be the Revised Payment Services Directive (PSD2) and/or equivalent open banking initiatives.



Graph 6: Non-traditional entrants to the Retail banking
Source: The Economist Intelligence Unit

5. CONCLUSION

In modern conditions, in the era of technological revolution, characterised by the growing representation of new technologies in all areas of business and human activity, digital banking is a necessary part of every bank as a way to overcome outdated approaches and mismanaged client relationships. Modern banking through modern technology creates new products and changes distribution channels, i.e. relationship with clients. Besides gradually reducing paper-based interactions, the primary focus has been on enhancing the product suite with value-added services and achieving an integrated channel experience. Introducing IT systems have helped banks to reduce costs. New technology-saving companies are flooding the market with innovative offers for financial services, customers are becoming more confident in using the full range of e-commerce offerings. The traditional branch-based model is being replaced by an integrated channel approach that allows customers to conduct banking seamlessly across various channels, such as initiating a transaction in a branch and finalising it in a mobile application. Consumers approach their personal banking in many ways, using different channels for different types of transactions. On the other hand, this leads to a reduction in the number of branches and, consequently, a fall in the number of employees, which in the future will be a problem for the economic and social policies of the states, although the profit of banks will grow.

REFERENCES:

[1] FDIC, Digital Banking Report, 2015. https://thefinancialbrand.com/wpcontent/uploads/2015/06/Total_number_of_us_bank_and_thrift_offices-565x408.png
[2] Gurau, C., Online banking in transition economies: the implementation and development of online banking systems in Romania, The International Journal of Bank Marketing, (20), 6, 2002., p 285-296.
[3] https://bankinnovation.net/2012/10/as-online-banking-acceptance-grows-is-mobile-banking-reaching-the-tipping-point-with-millenials/
[4] Jayawardhena C., Foley, P., Changes in the banking sector – the case of Internet banking in the UK, Internet Research: Electronic Networking Application and Policy, (10), 1, 2000, p 19-31.
[5] Marous, J., As Online Banking Acceptance Grows Is Mobile Banking Reaching the Tipping Point With Millenials? 2012,
[6] Maxfield, J., Bank of America Is Closing Branches as Mobile App Users Grow, 2016, from http://www.fool.com/investing/general/2015/10/07/chart-bank-of-america-is-closing-branches-as-mobil.aspx
[7] Mols, N. P., The Internet and banks' strategic distribution channel decisions", *International Journal of Bank Marketing*, (17), 6, 1999, p 295-300.
[8] Panian, Ž., *Internet i malo poduzetništvo*, Informator, Zagreb, 2000.
[9] Reidenbach, R. E., Wiloson, T. C., McClung, G. W., Goeke, R. W., The Value Driven Bank, New York: Irwin, Professional Publishing, a Times Mirror Higher Education Group, Inc. Company, 1995.
[10] Sarreal, R., History of Online Banking: How Internet Banking Went Mainstream, https://www.gobankingrates.om/banking/banks/history-online-banking/
[11] The Conversation, How finance workers are paying the price for the industry's profit, http://theconversation.com/how-finance-workers-are-paying-the-price-for-the-industrys-profit-83747
[12] The Economist, A Survey of Online Finance, May 2000.
[13] Tomašević Lišanin, M., Bankarski marketing, Informator, Zagreb, 1997.
[14] Wiesner Mijić, V., Otpuštanje na bankarski način "Operativa odlazi, menadžeri dolaze", Večernji list, 19.1.2005.