

# RETAIL BANKING – CONSTRAINS AND CHALLENGES OF THE IT SYSTEMS

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**Abstract:** *The history of Banks' IT systems in Romania has its origins in the 1990s when the main banking operations began to be supported by IT systems. Nowadays, IT systems have become a critical element of every bank. This journey came with constrains and challenges for the IT systems that are related to, operations, risk management, security, compliance adoption of the robots, chatbots, machine learning and artificial intelligence.*

*In today market, customers begin to pay special attention to other factors besides the attractiveness of a banking product, such as facilities for credit-related products and services, the quality of banking services, the response time to a request, product distribution channels, security of the operation, easiness to interact with the bank by using different channels, to safety and the image of the institution. Customers want/demand a nice and memorable experience each and every time. This is why in order to support these new elements in the evaluation of banking experience, banks need competitive IT systems that are able to support the activities of the entire selling process and also for the entire life time of the product.*

*Today, in my opinion, there are no more limitations regarding the support of a financial institution by the IT systems or Artificial Intelligence.*

**Keywords:** *#Digitalbanking, #ITSystems, #RetailBanking, #InternetBanking, #MobileBanking, #ArtificialIntelligenceinBanking*

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## **1. Introduction**

Within the Romanian banking system, and I dare say worldwide, “retail banking” is the leader of banking services. This is highlighted whether we look through the lens of the bank's turnover, through the lens of the bank's profit, through the lens of the volume of banking operations or through the lens of the number of active customers. But what are the competitive advantages of “retail banking” compared to other areas of the banking system? When we talk about competitive advantages, we talk about:

- The number of clients;
- The number of branches;
- The number and types of banking products offered by the bank to all its clients;
- The daily volume of operations.

In order to maintain these competitive advantages, but especially to be able to excel in customer service and to increase market share, a bank needs many resources and here we are talking about: well-trained human resources, a suitable infrastructure, well-designed business processes and last but not least a suitable IT system to support business processes and also the bank's informational system.

## **2. Literature review – The IT system and its evolution in the banking system**

Nowadays, since its establishment, a bank needs an IT system that supports its business processes as much as possible. But the IT system is not the same as the computer system and the computer system is not the same as the informational system.

When we talk about the IT system, we mean the set of hardware components, applications and communications that deal with recording, processing and transmitting information. The IT system is, today, a subsystem of the computer system.

The computer system can be defined as a set of resources put together and organized to record and process information that has as its purpose the fulfillment of some activities. The term resources means the following: people, procedures, IT systems and everything else that is necessary to be able to collect, record, process and transmit information automatically or semi-automatically.

The information system can be defined as the set of resources put together and having the role of collecting, recording, processing and transmitting information on the basis of which business decisions and improvement of existing processes can be made. By the term resources, as in the case of the IT system, the following are understood: people, procedures, IT systems and everything else that is necessary to be able to collect, record, and process information. At the macro level, the components of the information system are:

- The operational system;
- The Information System;
- The decision-making system;
- Flow of incorporation of decisions to improve the operational system and the IT system.

So the information system, is a component of the decision making system and the IT system is a component of the information system.

For a retail bank, the information system plays an essential role. The key components of a retail bank's information system are:

- The people;
- Processes and procedures;
- The IT system.

Out of these 3 components, people, processes and procedures have appeared since antiquity, with the formation of the first bank. The IT system appeared later, in Romania starting with 1985 and in the banking system it is used on a large scale starting with 1990.

All these 3 components of the information system have undergone changes over time, each change coming as a result of the adaptation and development of the banking system and the products provided by it.

Looking back in the 1990s, every bank branch had a local IT system that supported business processes. Day closing was done in each branch and after it was completed successfully, it was transferred to the bank headquarters where the day closing process on the bank was completed. The next banking day opened in each branch, was followed by the current activity and culminated with closing for the day. This almost independent way of functioning of the branches that had their own IT system that supported all the activity is called decentralized way of working and the IT system has a decentralized configuration. An important limitation of this way of working is that in the decentralized operating system, each client of the bank was assigned to a branch and all banking operations could only be done in that branch. If he went to another branch, the data about him as a customer and the operations he did were not available. A major advantage was that if there was a problem with the IT system in a branch, only that branch was affected, the other branches continuing their activity without being affected. An important change in this mode of operation appeared with the advantage of the centralized IT system. The centralized IT system is characterized by the fact that all branches connect to a central server to open the banking day, perform operations and close the banking day. In this server there is data about all the bank's clients and all the operations done by them. The great advantage of the centralized system is the fact that a client's data can be accessed from any branch and in this way a client can be serviced in any branch of the bank. In Romania, the first centralized system was launched by Banca Comerciala Romana in 2007. One of the challenges of the centralized operating mode is that the IT system must work without interruption, at least during the customer service schedule. This is mandatory because in the case of the centralized IT system, to distinguish it from the decentralized one, if the IT system does not work, all the bank's branches are affected and cannot offer services to customers.

Another point of reference in the development of the IT system in the financial industry was, in my opinion, the introduction of a new banking product, namely the debit card and the credit card. This product required

the enrichment of the banks' IT system with a new component, namely the IT system for managing transactions with debit and credit cards. The novelty element of this product was that it gave each client access to the money from the current account 24 hours a day, 365 days a year. This banking product also brought a challenge for the retail IT system, namely an almost continuous operation of the card system 365 days a year, requiring a service availability of at least 99.9% (that is, an interval of a maximum of 4 hours per month, time in which the system does not work). It should be noted that the card system has several components, namely:

- Centralized IT system;
- ATMs (Automatic Teller Machines). These machines also contain a computer inside them that runs certain programs with the help of which they work;
- The human resources that serve the ATM network and the IT system.

The challenge related to the availability of the card system is practically associated with each component element. That is why banks invest considerable resources in the card system in order to have the highest possible availability. This is necessary because it is not the IT system that produces the most events that lead to a decrease in availability, but the operation of each ATM, its maintenance and its supply of money.

Another major challenge for the banks was the integration of the IT system of the card system with the central IT system of the bank. Until they are integrated, there is a delay (up to 24 hours on working days) in synchronizing the amounts from the client's current account held in the bank's IT system and the account associated with the client in the card system's IT system. This created dissatisfaction among customers considering that they were depositing money in the current bank account but could not use it using the card because they were not immediately visible in the card system.

Over time, the debit card was associated with the current account product, which led to the development of the card system to support more operations, namely:

- Current account balance query;
- Depositing money in the current account;

- Depositing money in an account other than the one associated with the card;
- Exchange.

Once with this association, the card system became interconnected with the central IT system of the banks and in this way became practically another module of it.

Another turning point from the point of view of the development of IT systems in the financial industry was the appearance of internet banking, mobile banking, phone banking systems. Together with these, a new chapter was opened in the IT systems industry in the banking financial sector and the seed of the digitization of banking processes was planted. Payment instruments with remote access (internet banking, mobile banking, phone banking systems) began to appear in 2002 and were regulated for the first time in 2004 by the Order of the Ministry of Communications and Information Technology regarding the approval procedure for payment instruments payment with remote access, such as Internet-banking, home-banking or mobile-banking applications no. 218 of June 14, 2004. Practically starting from 2004, this new banking product is regulated, which, together with branches and ATMs, completes the channels through which a customer interacts with the bank.

### **3. Methodology**

The below chapters represents my own view of IT systems split, and the implementation impact of the new technologies in the banking sector. The research was made by reviewing the scientific and business literature mentioned in the bibliography, as well as existing laws and regulations of the banking industry.

#### ***3.1. Classification of IT systems from the point of view of the risk management system***

From the point of view of the model implemented for efficient and effective risk management, banks' activities can be divided into three

levels: First Line of Defense, Second Line of Defense and Third Line of Defense. This risk management model is designed to facilitate an effective financial and non-financial risk management system. This model is used because it brings with it a standardized and comprehensive risk management model that clarifies the roles of each function in the bank, reduces costs and reduces the effort required to manage financial and non-financial risks. The implementation of this risk management model involves the division of the bank's functions on the following three levels:

- First line of defense (1LdA) – are generally the business and IT divisions that have the obligation to manage the risks arising from the activities carried out;
- The second line of defense (2LdA) – is represented by the risk function and includes the bank's internal control functions. The risk function has the role of managing the risks that appear in the day-to-day activity of banks and helping the first line of defense in identifying, managing, monitoring and reporting risks.
- The third line of defense (3LdA) – is represented by the audit function (internal and external) whose role is to verify compliance with the legal and procedural framework of the bank and to mention, if necessary, findings that lead to the improvement of processes the bank and the internal control framework.

Looking through the same prism, we can classify IT systems as systems that support the processes:

- 1LdA – banking products & digitalization – direct interaction of the client with the bank;
- 2LdA – cost of risk and risk management – indirect interaction of the client with the bank;
- 3LdA – audit and monitoring of audit findings, that is, traces of the direct and indirect interaction of the client with the bank.

### *3.1.1. THE IT systems that support the main retail banking products – 1LdA*

The IT systems that support the business processes included in 1LdA are the systems that are related to the main product categories of retail

banks, namely: 1. Current account; 2. Saving instruments; 3. Credit instruments; 4. Insurance instruments; 5. Private banking; 6. Payment systems that also include digital channels (including ATMs, MFMs, POSs, Internet Banking, and all digital products).

If we look at these banking products and take into account the fact that there are interdependencies between these products and take into account the fact that a person can have one or more products, we can realize the complexity of the IT system that supports 1LdA in retail banking. Depending on the architecture of the IT system, there may be a main IT system generally called “core banking” which has functionalities that support all these products, or there may be a nucleus consisting of “core banking” and then IT systems for functionalities that interact with each other through core banking. The computer system being the structure on which the retail banking products stand, the IT system, which is part of the computer system, must be able to support the requirements of each banking product and also all the changes and customizations that support the life of a banking product. Banks, to be competitive, need competitive products. Competitive products in a competitive market mean products that reach customers, promoted through different promotion channels and that are accepted and bought by them.

In his book Retail banking, the author, Nicolae Danila, mentions the following about lending instruments: “The more attractive the activity of lending to individuals, the more retail banks are obliged to “invent” new products that can capture certain categories of customers new or to increase the number of banking products purchased by existing customers”<sup>1</sup>.

This “invention of new products” implies a change in the main parameters of a product, namely interest and commissions.

Depending on the type of customers, by changing these parameters, an unattractive product can become very attractive.

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<sup>1</sup> Nicolae Dănilă, Retail Banking, Editura Expert, Bucuresti, 2004



An example in this sense are the “0” interest loans, granted by the financial division of the producer of the respective good. This model is widely used in the automotive industry, where although part of the interest is included in the cost of the car and the loan has taxes and commissions that increase the final cost, there are many customers who use this financing model even if it ends up being more expensive than a loan for consumption.

The way in which these parameters are mixed to obtain the attractive product for customers is a challenge for the IT system that must allow this, and if it does not allow then the system must be modified in a very short time so that the “time to market” indicator for the product financially not to suffer. Depending on the architecture and technology in which the IT system was designed, changing it and/or making it more flexible can be a challenge or a limitation. For 1LdA from retail banking, the existence of a customizable and flexible IT system makes the difference between success or failure in the case of the competitive market both in Romania and in the world. The possibility of entering the market with an attractive product in a very short time is essential in capturing a market share or in maintaining it.

Looking at the financial banking market in Romania, once it matures, we can say that apart from the attractiveness of a product, there are other factors that can make the difference between success and failure. They concern the accessibility of banking services but also their quality. The author Nicolae Danila mentions in his book “Retail Banking” referring to banking services: “With the maturation of a banking market, there are certain changes in the behavior of natural persons, who begin to pay more attention to other elements, considered in the past as secondary rights such as: facilities for credit-related products and services, the quality of the banking services generally offered by the bank, the response time to a request, the distribution channels of the products, the safety and the image of the institution”<sup>1</sup>. If we are referring to the quality

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<sup>1</sup> Nicolae Dănilă, Retail Banking, Editura Expert, Bucuresti, 2004

and accessibility banking products then, again, we cannot exclude the IT system that supports these products.

Accessibility is given, in general, by the existing distribution channels for financial banking products.

Until 2019, depending on the product, the distribution channels were: the branch, ATM& MFM and the “Internet banking” system. It should be mentioned that not all products were available on all these channels. A credit instrument (guaranteed or unguaranteed) could only be obtained by going to a bank branch. Also, the opening of a current account, for a new client of the bank, could only be done in the branch. Instead, a payment could be made through all 3 mentioned channels.

Starting with 2019, another distribution channel appeared, namely the “digital channel”. By digitizing the processes of interaction with the customers, the bank is moving to the virtual environment. Thus, products that could only be sold in the branch, become possible through a suite of applications or through the “Internet Banking” platform. Banks that lead the digitization can today offer through digital channels:

- opening a current account for a new customer,
- selling an unsecured loan,
- selling insurance related to banking products,
- opening savings deposits and, last but not least,
- payments to individuals and institutions having accounts in the same bank or in any other bank in the world.

This was possible through the massive adoption of new technologies and the development of new IT systems to support these products. I dare to say that nowadays there are no more limitations regarding the support of a financial institution from the point of view of the IT system. With the introduction of digitization in the banking system, the challenges only concern the creativity and ingenuity of the staff who must create products adapted to the needs of customers but in a way in which the “customer experience” reaches maximum heights and the product contains elements of uniqueness for each customer such as customized prices and certain benefits that are relevant only for that customer.

This is only possible with the help of information systems, and with the introduction of digitization, the connection between the bank and the computers system will enter a new stage, in the sense that financial institutions will become technology companies with a banking license.

### *3.1.2. The IT systems that support the risk function – 2LdA*

The risk function of a bank is generally made up of the strategic risk supervision and management function, the retail banking risk management and supervision function, the compliance function, the fraud prevention function, the security function, the legal function and function for the protection of personal data.

Each of these functions has one or more IT systems that help the respective function in fulfilling the obligations for which it was created.

The IT systems related to the strategic risk management function and the retail banking risk management function are part of an IT system that supports the following main areas:

- Development of a taxonomy of risks based on the regulations in force;
- Defining the risk appetite of the bank;
- Assessment of the materiality of risks using various methodologies (eg ICAAP);
- Calculation of the minimum capital requirements respecting the regulations and the procedural framework in force;
- Defining and calculating the values of the risk indicators;
- Monitoring of risk indicators;
- Reporting risks and different indicators.

As in the case of the IT systems in the first line of defense, the importance of the IT systems in the 2nd LdA is major considering that they support:

- Business processes that are very well regulated;

- Mathematical models used in the calculation of the various risk indicators and the capital needs of the credit institution;
- A risk reporting system and risk indicators.

The main trends that have so far defined this of the 2LdA are mainly related to a solid regulatory framework that covers the entire taxonomy of risks, types of indicators and reporting requirements, to the change in the perception and requirements of clients in terms of the role of banks in the financial ecosystem of Romania, to the strengthening of the dependence of the risk management function on technology, to the need to increase the quality of the data used in the evaluation of clients and last but not least, they are related to the need to constantly decrease the cost of risks through a continuous improvement of retail credit risk management models. In retrospect, compliance with the increasingly numerous and more specific regulatory requirements was a continuous challenge. These requirements were implemented through changes at the level of business processes and IT systems. In order to better understand these challenges, we can mention: the implementation of stress tests, the implementation of a system to prevent money laundering, the implementation of a system for the verification of sanctions, the implementation of new reporting requirements.

If we refer to limitations, the most important one is related to the quality of the data regarding the financial status of the clients and their guarantees. Even if there are checks at the Banking Risk Center and at the Credit Bureau, there were enough cases in which the information received from customers and corroborated with the checks made failed to highlight a high risk profile for some customers, especially for the risk of fraud.

Considering the speed with which the business environment changes as well as the legislative requirements, although predicting certain trends is not easy, I believe that the following two points will constitute challenges for banks:

1. *Implementation of new models for the assessment of customer risk in the retail banking area.*

These models will have data from various sources and will give a broader picture regarding the profile of a potential client as well as the changes in

risk for existing clients. The following data sources can be used: location and time spent in a certain location, real income, potential legal problems of the person or related to potential or existing real estate guarantees, data from professional databases that contain information about potential risks regarding natural persons (eg Bureau van Dijk – problems reported by the media, sanctions, presence of the person on watch lists, politically/publicly exposed persons). These complex data sources combined with the use of new technological trends (artificial intelligence and/or “machine learning”) will create the prerequisites for establishing the most correct risk profile of a potential client or existing clients. This is also revealed by McKenzie who states that “the use of machine learning algorithms in combination with large and complex data sets will lead to more accurate risk assessment models”<sup>1</sup>.

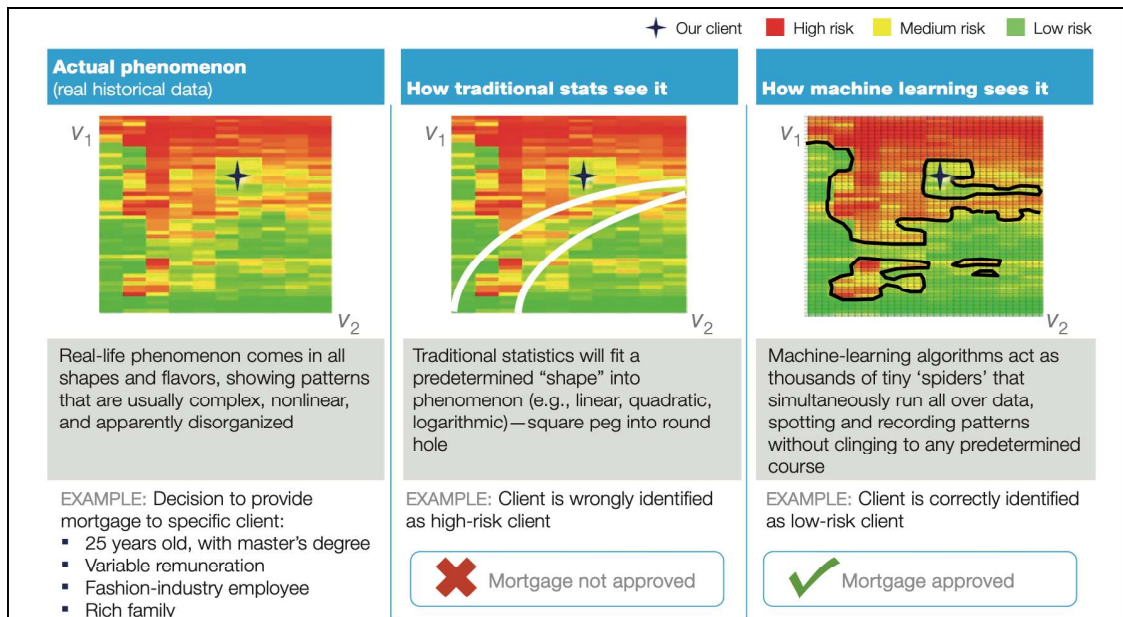
Figure 1 shows that using standard (existing) methods for establishing a client's risk profile can lead to results that are not always correct. The use of new technologies (machine learning) can help in correctly establishing the client's risk profile.

*2. Changing the customer profile and increasing their expectations in terms of the types of banking services offered, the access to these banking services, the response time and the number of channels through which they can access banking services. To be able to satisfy this expectation of the clients, the risk function must be constituted as a facilitating element of the business processes, keeping at the same time a critical and vigilant eye on the respect of the process and the establishment of the degree of risk of the client throughout its life. This is also highlighted by a McKenzie study which states that “the risk function must be a contributor and a collaborator of the business lines throughout the process of purchasing banking services”<sup>2</sup>.*

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<sup>1</sup> [https://www.mckinsey.com/~media/mckinsey/dotcom/client\\_service/risk/pdfs/the\\_future\\_of\\_bank\\_risk\\_management.pdf](https://www.mckinsey.com/~media/mckinsey/dotcom/client_service/risk/pdfs/the_future_of_bank_risk_management.pdf)

<sup>2</sup> [https://www.mckinsey.com/~media/mckinsey/dotcom/client\\_service/risk/pdfs/the\\_future\\_of\\_bank\\_risk\\_management.pdf](https://www.mckinsey.com/~media/mckinsey/dotcom/client_service/risk/pdfs/the_future_of_bank_risk_management.pdf)



**Fig. 1:** Using machine learning to establish clients' risk profile

Source: McKinsey analysis- The future of bank risk management

To identify, evaluate, measure, treat and report risks, a financial institution has and will need in the future computer systems that contain very sophisticated IT systems that will have to be able to combine data from many different sources. This will lead to an even greater dependence of the financial institution on IT systems.

### 3.1.3. The IT systems that support the audit function – 3LdA

The third line of defense has its well-defined role in the risk management system of a financial institution. It practically has to prove the compliance of the bank's operations and reports with the laws, regulations and procedural framework of the financial institution. The audit process is a well-structured one in which the specific activities are done in order and at the end, following the completion of the entire audit process, it is possible to conclude on the degree of compliance of the financial institution in relation to the existing laws, regulations and procedural framework. As in the case of the first two lines of defense and in the case of the third line of defense, the IT system plays an

important role in supporting the entire process and documenting the audit opinion and the audit report. Among the important characteristics of IT systems, I specifically mention: the possibility to work in a team and to access the documentation created in each step of the process by team members, to allow access to information only to team members, to allow the storage of audit records, to it helps to consolidate the information and to issue the opinion and the audit report and to allow the constant monitoring of the findings of the audit team as well as the implementation phase.

The existing IT systems that support the third line of defense are, in my opinion, not very complex systems, but they have reached a high level of maturity and can, without problems, support the entire audit process.

### ***3.2. SOME considerations regarding retail banking and the influence of IT***

#### *3.2.1 Banks' digitization process*

Since 2020, perhaps due to the COVID 19 pandemic, Romanian bank customers have begun to appreciate more and more the interaction with the bank through digital channels. Thus, more and more customers have started to use internet banking systems to make payments, open current accounts, deposits and other banking operations for which until 2020 they used to go to a bank branch. Also, bank card payments have experienced an important increase in the last 2 years, but this is a trend that started many years ago.

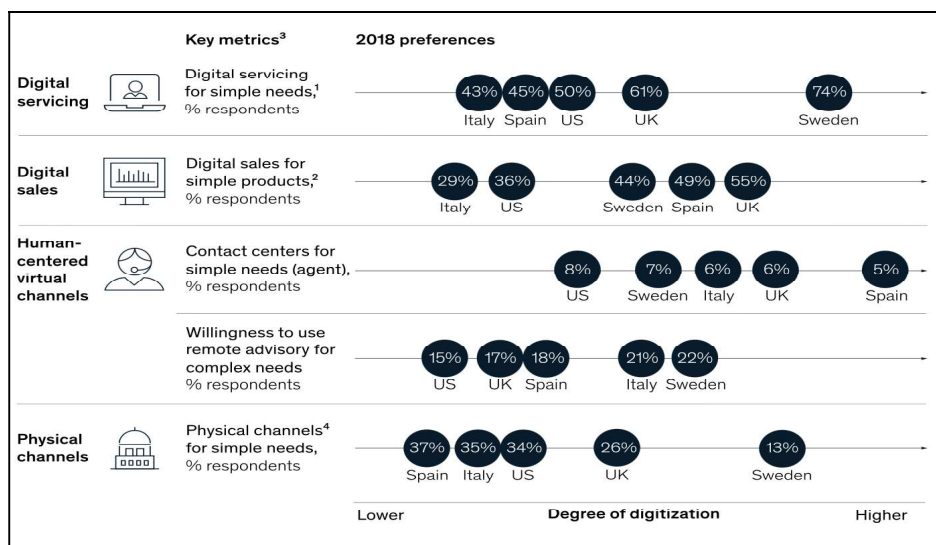
The fact that more and more Romanians prefer to interact with the bank through digital channels means that Romanian banks have managed to reach operational maturity, to have IT systems that are attractive to their customers and last but not least to have IT systems and accessible products both from the point of view of monthly costs but also from the point of view of customer-IT system interaction.

In the world, this trend of limiting physical interaction with the bank is an older trend, and Romanian customers have also aligned themselves with this trend, especially customers from big cities.

In a study carried out by the consulting firm McKenzie in 2018<sup>1</sup> it is stated that the markets will advance towards the use of digital channels at different rates and with different starting points (see figure 2). This study shows that more and more customers prefer to interact with banks through digital services, through “call centers” and fewer and fewer through physical interaction using bank branches.

What can be seen in figure 2 is the fact that in Europe, especially in the northern part of the continent, there is an advanced preference for the use of digital channels in contrast to other European countries such as Spain, Italy and Romania where there is a strong preference for using bank branches as bank customer interaction mode.

What has happened from 2018 until now is the fact that customers' preference for digital channels has grown significantly so that in Romania sales through digital channels have reached a percentage of 25% of total sales for some banks which are more advanced in digital channels. This highlights the fact that the digitization trend advances differently in each country.



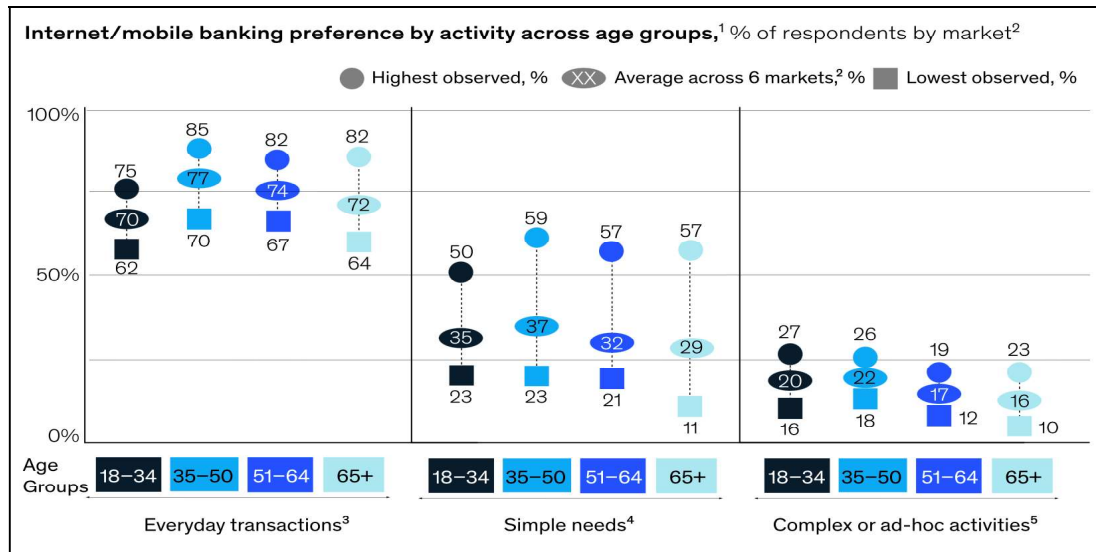
**Fig. 2:** Markets will advance towards the next normal at different paces

Source: McKenzie analysis – Reshaping retail banking for the next normal

<sup>1</sup> <https://www.mckinsey.com/industries/financial-services/our-insights/reshaping-retail-banking-for-the-next-normal>



Another important thing mentioned in the study done by the consulting firm McKenzie in 2018<sup>1</sup> is the fact that age is no longer considered a differentiating factor in the use of banks' digital channels. Thus, figure 3 (source McKenzie) shows the fact that almost for various types of transactions, clients of all ages use the “Internet Banking” systems of banks in an overwhelming percentage (between 50-80%).



**Fig. 3:** Age is no longer a differentiator for retail banking preferences

Source: McKenzie analysis – Rewriting the rules succeeding in the new retail banking landscape

Some of the conclusions that emerge from analyzing these studies are the following:

- Digital systems represent the future for what “Retail Banking” will mean;
- The more intuitive the IT systems that support the digitization of processes are for users, and the more accessible their adoption by clients will be, and the bank will be able to gain market share or at least maintain its market share;

<sup>1</sup> <https://www.mckinsey.com/~media/mckinsey/industries/financial%20services/our%20insights/rewriting%20the%20rules%20in%20retail%20banking/rewriting-the-rules-succeeding-in-the-new-retail-banking-landscape.pdf>

- In the long term, those who do not invest in digitization will no longer exist on the retail banking market. In my opinion, the situation is the same as in 1998 when, as a company, if you didn't have a presence on the Internet (company web pages), you started to lose market share. And today the company that does not have a WEB presence and is not present on social networks practically does not exist;
- Banks' IT systems are becoming, if they have not already become critical resources for a long time, in which banks must constantly invest in order to maintain their competitive advantages.

Some of the above studies also included Romania in their analysis and those trends are valid for Romania as well, but in my opinion their applicability is not to the entire customer base of the banks. When I say this, I mean that, in my opinion, Romanian customers can be divided into four categories:

1. Banked customers, educated and who use the banking facilities to the maximum possible – they target the banks that are “trend setters” and massively use digital channels to solve their financial problems;
2. Banked customers, with below average financial education, who use simple banking products and who prefer a mixed use of classic channels (branch and ATM-MFM) with digital ones (internet banking)
3. Captive customers – customers who do not have a financial education and who have a current account and a debit card because the employer chose this formula for paying the monthly salary. They use the ATMs or the branch once a month to withdraw their salary. Apart from these 2 channels, they do not use other banking services or other channels of interaction with the bank;
4. Unbanked customers – customers who do not have a financial education, do not have easy access to banking services and in the vast majority do not have enough resources to be able to be banked.

That's why, in my opinion, one of the essential directions in which banks must continue to invest is the financial education of clients and non-

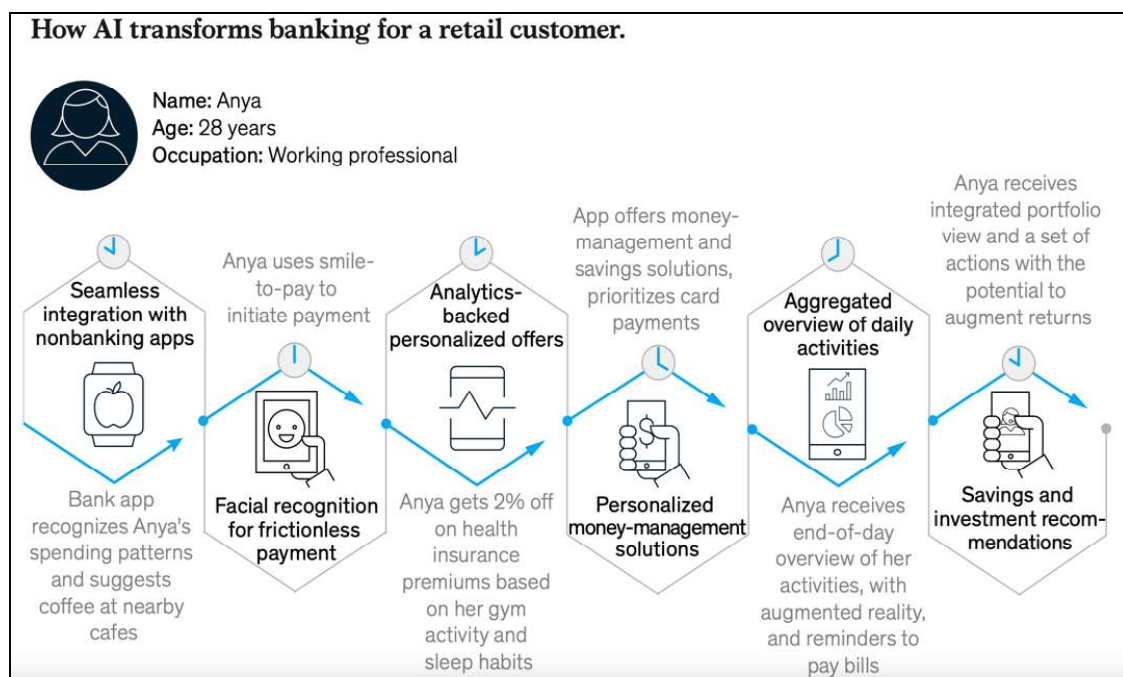
clients so that more and more people from categories 2, 3 and 4 above will transcend to category number 1.

In the area of digital financial services, Romania has a considerable advance compared to other European countries. This competitive advantage, in which the banks' IT systems play an essential role, must be multiplied by increasing the number of customers who consciously use banking services and have a level of financial knowledge that allows them to use different bank products according to their needs. In my opinion, banks in Romania have this prominent role to play in helping their clients and the economic environment to overcome the economic and financial problems generated by the pandemic and ongoing crises (energy crisis, labor crisis, geopolitical crisis) and to lead to prosperity. For this, banks need to come up with personalized products for the clients from the category 1 and 2 and to educate more all clients and non-clients. A big help here is big data analyzed with Artificial Intelligence (AI). By using AI banks gain improved customer experience via personalized products, better advice and education with chatbots, enhanced security of their customers operations, reduced fraudulent transactions and increase operational efficiency and cost efficiency. The lists of benefits of using AI in banking is extend with:

- Educated decision making process – by analyzing large amount of data AI provide valuable information referring to customers' behavior, customers risks, market and economy trends. With this kind of information banks can take educated decisions regarding their customers and the economic environment in which they are operating;
- Improved risk management and compliance- AI can provide to banks risk analysis for each customer especially for credit default of market fluctuation and implications for the credit portfolio. Anti Money Laundering and Know Your Customer are two important areas in which AI can bring value added to banks by using data analysis.
- Personalized banking experience – by analyzing different customer data and by integration with different other technologies & industries

that can provide valuable data regarding the customer banks can enhance customer experience by providing tailored services to its customers and special offers depending on customer' profile, behavior and interests. An example of such a personalized/tailored banking experience was presented by McKinsey in their paper “AI-Bank of the future. Can banks meet the AI challenge”<sup>1</sup>. This is a typical example of a tailored services obtained by analyzing client data and information. In a graphical format is presented in figure 4.

In my opinion AI is a point of no return in the banking world which is usually reluctant to big technological changes. But, banks that will make a step will have a significant competitive advantage and those which will not make the step will remain with inefficient processes and limited client services.



**Fig. 4:** AI – Bank of the future

Source: McKenzie Analysis – AI-bank of the future

<sup>1</sup> <https://www.mckinsey.com/~media/McKinsey/Industries/Financial%20Services/Our%20Insights/AI%20bank%20of%20the%20future%20Can%20banks%20meet%20the%20AI%20challenge/AI-bank-of-the-future-Can-banks-meet-the-AI-challenge.pdf>

AI does not come only with benefits, as any other thing has also concern and challenges. One of the most important, at least in Europe, is *Data Privacy*. To be able to collect so much information about the customer from different sources, banks need to have the client consent be able to manage the consent and to respect in full the General Data Protection Regulation requirements. This is an important point that represent also a concern (i.e. how many data banks have about me, how they are using it, is it ethic how banks are using my data). Another concern is related to the fact that the customer's data must be kept secure by the banks. This is why topics like cyber security and customer's security are representing significant challenges for the banks in the existing environment and banks are integrating them under the umbrella of digital trust concept.

Another challenge and to some extent also a concern is the *quality and unbiased data* used for training the AI model. This comes due to the fact that the results of the AI model are dependent of the quality of data used. Poor quality data or discrimination data used for training the model might lead to poor results and/or results that are discriminatory.

Most of the banks has fragmented and complex IT systems with legacy components and new components. Legacy systems are using old technologies that native cannot be linked with new AI technologies. Therefore, integration of AI technologies with legacy technologies must be carefully analyzed and determined if the legacy IT systems are capable of integration with AI. *Existing legacy IT systems* represent another challenge in implementation of AI technology in banking industry.

No matter if it is difficult or it will take time to implement new technologies (i.e. robots, chatbots, machine learning, artificial intelligence) this must be done if banks want to remain a relevant provider of financial services. Without these new technologies, the quality of service provided to the customer will become very quickly an obsolete one and institutions (i.e. financial or not) that are using technologies will be the trend setter in the new financial era. Already, technologies companies started to provide simple financial services to their app users. For example, to transfer money in Asia is mostly used Ali Pay by private individuals. This is an app that allow to

transfer money to another person based on the phone number besides other functions. Also, Ali Pay is providing small loan to their customers for good acquisitions. Ali Pay is not a financial institution, it is a technology company that is stretching its technology limit as much as possible to offer services to customers. The same thing banks must do, stretching their IT systems capabilities by implementing new technologies, partnering with other technology companies and fintech in order to drive and support innovation in the financial industry, improve efficiency, enable grow, better manage risks and regulatory requirements and create a pleasant experience for the customer. A positive, pleasant experience for the customer is one of the differentiating factors, in my opinion one of the most important ones, that will lead to business grow and that will make the difference between the success or failure in the future financial business world.

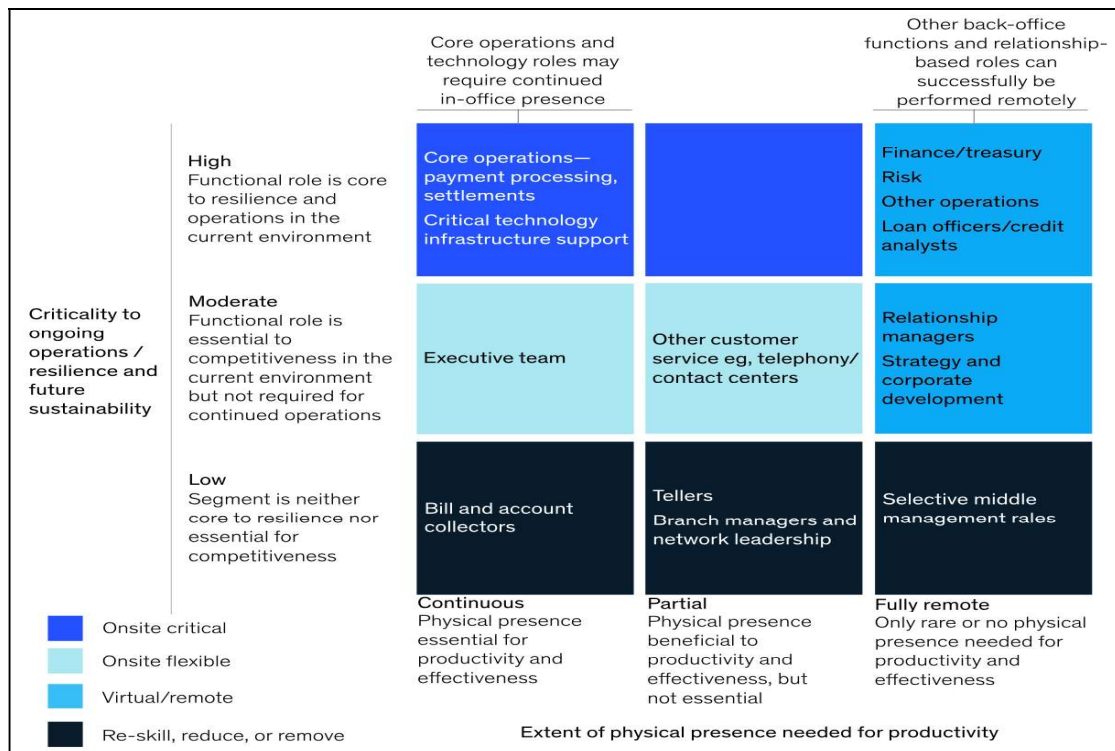
### *3.2.2. The hybrid way of working – the new normal in the banking system*

Since 2020, the world, due to the pandemic crisis of COVID-19, had to face a new challenge, namely: working from home. I can say without a mistake that very few companies in Romania had this possibility and the banking system was not among them. But compared to other industries, the financial industry in Romania once again proved its resilience and managed in a very short time to make it possible for its employees to work from home and also to allow customers to interact with the bank through digital channels for an extensive number of services. For this, significant investments and many working hours were necessary, especially for the IT and security teams, but they were crowned with success. The banking system in Romania provided financial services to its clients without interruption and the banks' IT systems worked and are working in optimal conditions. These changes were superimposed, in the case of the first 5 banks in Romania, to continue the digitalization process of bank customer interaction.

The result is that in the last two years, for very extended periods of time, bank employees have worked completely from home or with a very small number of people in the office (with the exception of bank branches).

This way of working was and is applied in other countries as well, a fact that is specified by the McKenzie consulting company's study regarding the new normal in Retail Banking <sup>7</sup>. This study highlights the fact that many of the functions of a bank can work completely or partially from home<sup>1</sup> (see figure 5).

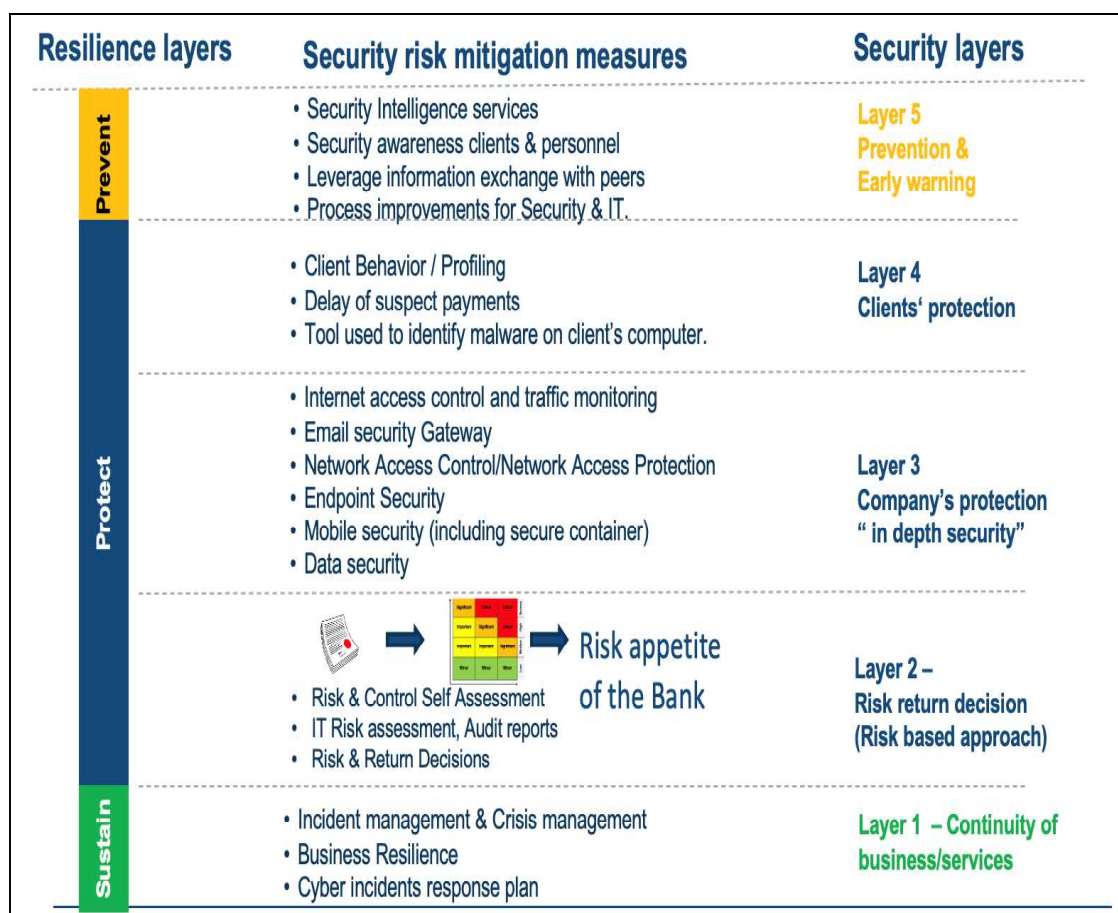
To implement a new way of working that involves a lot of telework or partially telework, the bank's IT system can be both a limitation and a challenge. It constitutes a limitation if, from the point of view of the architecture, technologies and available resources, it is not possible to make a transition to telework for at least 50% of the staff. The constant increase in the need for 50% or more employees to work remotely from various places (including from other countries of the world – digital nomads) can be a challenge.



**Fig. 5:** Retail banks can rethink the location of work  
Source: McKenzie Analysis – New normal in retail banking

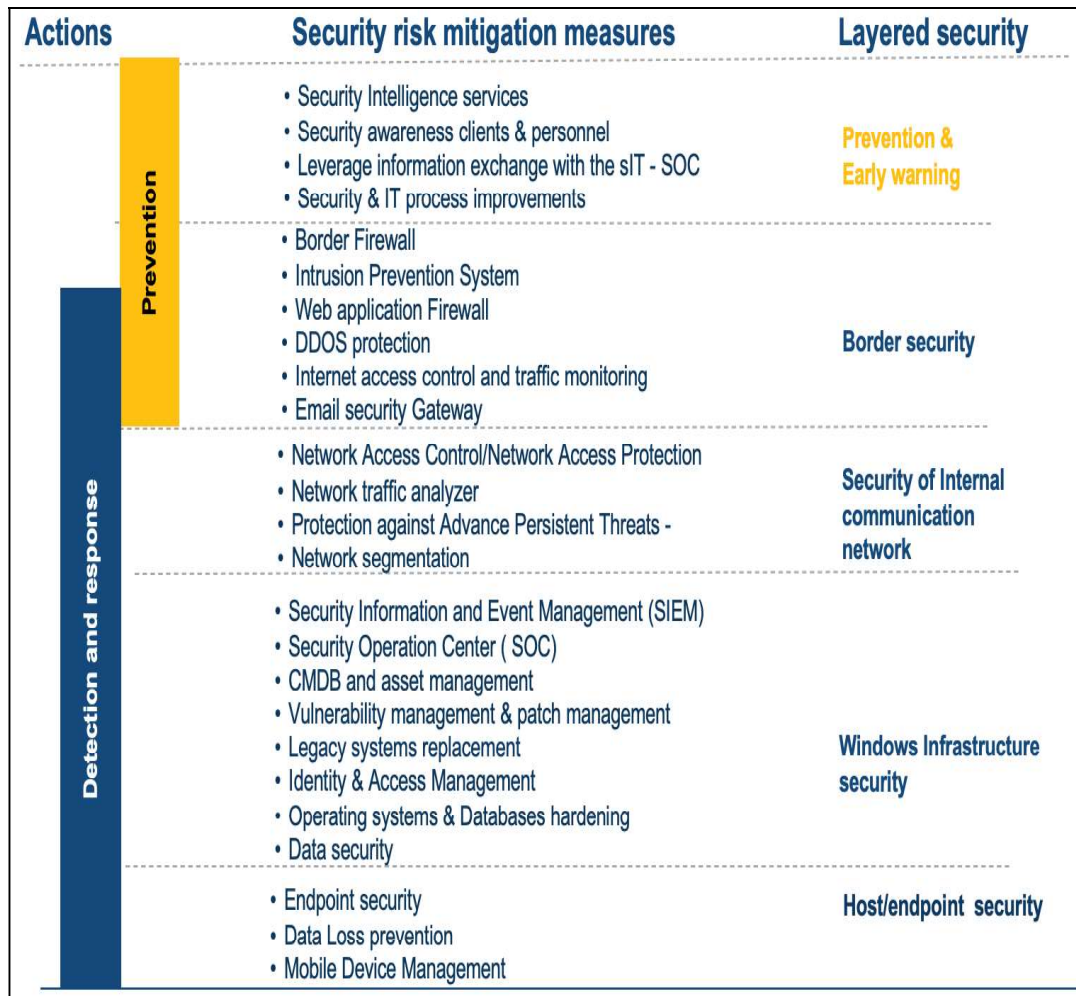
<sup>1</sup> <https://www.mckinsey.com/industries/financial-services/our-insights/reshaping-retail-banking-for-the-next-normal>

Another challenge for IT systems is to ensure their security. For this, each bank had to adapt its security model. The Security model of a bank usually contains several levels of security ("in depth security") but also several areas to be covered (see figure 6-1 and 6-2). In the area of IT system security, working from home has influenced all levels of security of the bank (see figure 6-2 – "in depth security"). That is why banks have invested in security systems and in qualified personnel. A direct element of this trend was the increase in costs with human resources (IT and Security personnel salaries) but also with security systems. It should be mentioned that these improvements in IT systems and security systems have also made a major contribution to the implementation of digital processes, representing a prerequisite to be able to implement and offer these services to clients.



**Fig. 6.1: Security layers**  
 Source: Author's own analysis





**Fig. 6.2:** Security layers in depth

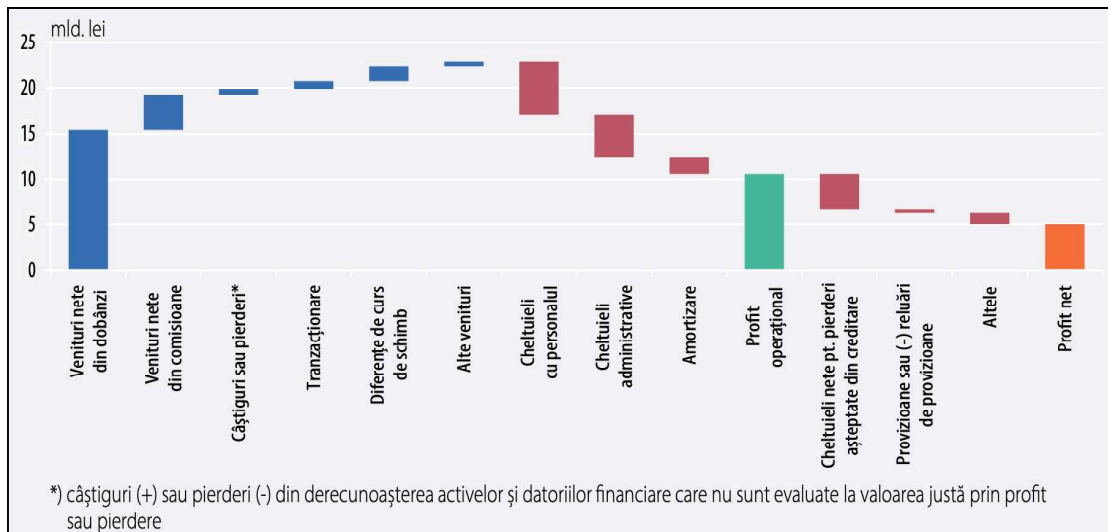
Source: Author's own analysis

This phenomenon is also mentioned by the National Bank of Romania, which mentions in the “Report on financial stability from June 2021” that: “Operational profitability recorded a predominantly negative dynamic, as a result of the gap between the growth rate of expenses, which is larger (including due to investments in the automation and digitization of banking processes), and that of operating income”<sup>1</sup>.

Also in the same report, the National Bank of Romania shows, at the level of the banking system, the distribution of profit on various sources of income and the distribution of expenses on various sources (see figure 7).

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<sup>1</sup> Banca Nationala a Romaniei, Raport asupra stabilitatii financiare, Bucuresti, iunie 2021



**Fig. 7:** The distribution of profit on various sources of income and the distribution of expenses on various sources

Source: Banca Nationala a Romaniei, Raport asupra stabilitatii financiare, Bucuresti iunie 2021

From figure 7, it can be seen that personnel expenses kept their first position in the structure of operating costs (48%, December 2020),

The fact that digitization and the increase in security have generated high costs with IT systems is also highlighted by the National Bank of Romania in the Financial Stability Report from June 2021.

In this report it states that: “Operational profitability recorded a predominantly negative dynamic, as a result of the gap between the pace of increased expenses, more widely (including due to investments in the automation and digitization of banking processes), and that of operating income”<sup>1</sup>.

## 4. Conclusions

Banks, to be competitive, need competitive products that are considered attractive and useful by their customers. But in a mature market, customers start to pay special attention to other factors besides the

<sup>1</sup> Banca Nationala a Romaniei, Raport asupra stabilitatii financiare, Bucuresti iunie 2021

attractiveness of the banking product, such as facilities for credit-related products and services, the quality of banking services generally offered by the bank, the response time to a request, the distribution channels of the products, the security and the image of the institution. That is why, in order to support these new elements, in the evaluation of a banking product, banks need competitive IT systems that are able to support the activity of the entire bank.

Today, in my opinion, there are no more limitations regarding the support of a financial institution by the IT system, especially by using the robots, chatbots, machine learning and artificial intelligence technologies. They have become part of the critical bank infrastructure.

By digitizing the interaction between the customer and the bank, the deep link between the bank and the IT system enters a new era. The level of technology increases substantially and made possible that banking products, which until a few years ago were only available in bank branches, to become accessible to clients in any corner of the world they might be. That's why the challenges of a bank's IT system, together with the digitization of the interaction between the client and the bank, are only due to the creativity and inventiveness of the people who work in the bank and who develop banking products. And these products are no longer products that address a segment of customers, but are unique products, products that contain unique elements for each individual customer, such as customized prices and certain benefits that are relevant only for that customer.

This is only possible if there is a competitive IT system that can meet the demands of human creativity and ingenuity.

From an IT point of view, in the short and medium term, a successful bank will:

- digitize the interaction processes between the client and the bank and automate the back-office and operations as much as possible;
- will use new technologies like, robots, chatbots, machine learning, artificial intelligence to support innovation in the financial industry,

improve efficiency, enable grow, better manage risks and regulatory requirements and create a pleasant experience for the customer;

- had IT systems that are intuitive and accessible to users
- consider IT systems as critical resources in which you will constantly invest in order to maintain your competitive advantages and generate new ones in such a way as to have as large a market share as possible.

At the beginning, these investments in IT systems and human resources will be costs that will lead to a decrease in the operational profit of the banks, but in the medium and long term they represent the path to a successful retail banking. And that's only because in the future financial institutions will become technology companies with a banking license.

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