BUSINESS CONTINUITY MANAGEMENT IN THE BANKING AND FINANCE SECTOR. AN OVERVIEW OF SECTOR RELATED VARIABLES

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The article highlights the main criteria and characteristics for analyzing the functionality of the banking and finance sector, both from the user's perspective of the services and from the supplier's perspective, an approach correlated with the main lines of effort mentioned by the specific standards for business continuity management. The research method is mostly exploratory, using predefined formats for investigating the problem (DESTEP analysis, CANVAS analysis), with the intention of identifying some existing benchmarks in the Romanian practice in the field. The main contribution of the study is aimed at the qualitative increase of the financial security culture of the population and institutions in the public and private environment, identified as the main beneficiaries of the banking and finance services and products.

Key words: *continuity, banking institutions, criticality, functionality*

1. INTRODUCTION

Even if specialized literature dedicated to critical infrastructuresaddresses the financial-banking systems to a lesser extent, they are worth studying. An argument in this respect is provided by the simple and yetcomprehensive statement of the Nobel laureate in economics Paul Samuelson accordingto which*money is the blood that irrigates the economic system*. When putting it in context, it is obvious that the activity of the other critical infrastructure systems would not be possible, without the financial-banking component. Figure 1 shows from this point of view the functional role of thatin the global system of critical infrastructures. What is more, any institution activating in an economic market has, besides its own system of relations and specific rules, regulatory flows regarding overall functionality (especially for the private environment), some of which pertain to the the economic and financial stream. Moreover, people's daily life is dependent on the financial-banking systems through the activities related to ensuring the needs of day-to-day life, as well as a result of increasing use of electronic means of financial-banking transactions. All of the aboveprovide enough benchmarks to argue the need for the continuity of these service systems (taxes and fees, insurance, banks, stock exchange, treasury and payment systems).

The concept of business continuity management was introduced by the British standard BS 25999-2 and updated by ISO 22301 to help organizations minimize the risk of interrupting their business. According to the description (www.srac.ro) of this standard, the concept "*specifies requirements to plan, establish, implement, operate, monitor, review, maintain and continuously improve a documented management system prepared to help organizations protect themselves against incidents, respond to them, and recover from their occurrence. Incidents can take various forms, from large-scale natural disasters and acts of terrorism to accidents involving technology or environmental incidents*". Hence, aspects regarding criticality are deduced, and they are closely related to the definitionof critical infrastructures as provided by the Emergency Ordinance no. 98/2010:"*an*

element, system or component thereof, located in the national territory, which is essential for maintaining the vital functions of the company, of the health, safety, security, social or economic well-being of the persons and whose disturbance or destruction would have a significant impact at national level as a result of the inability to maintain those functions".In order to highlight the features delineating the criticality of the financial-banking system, it is eloquent to identifythe vital functions within the regulations pertainingto the field (law 225/2018): "*those services that are essential for the functioning of the company, such as: government business management; international activities; national defense; internal security; operation of the economy and infrastructure; security of population income and standard of living"*.

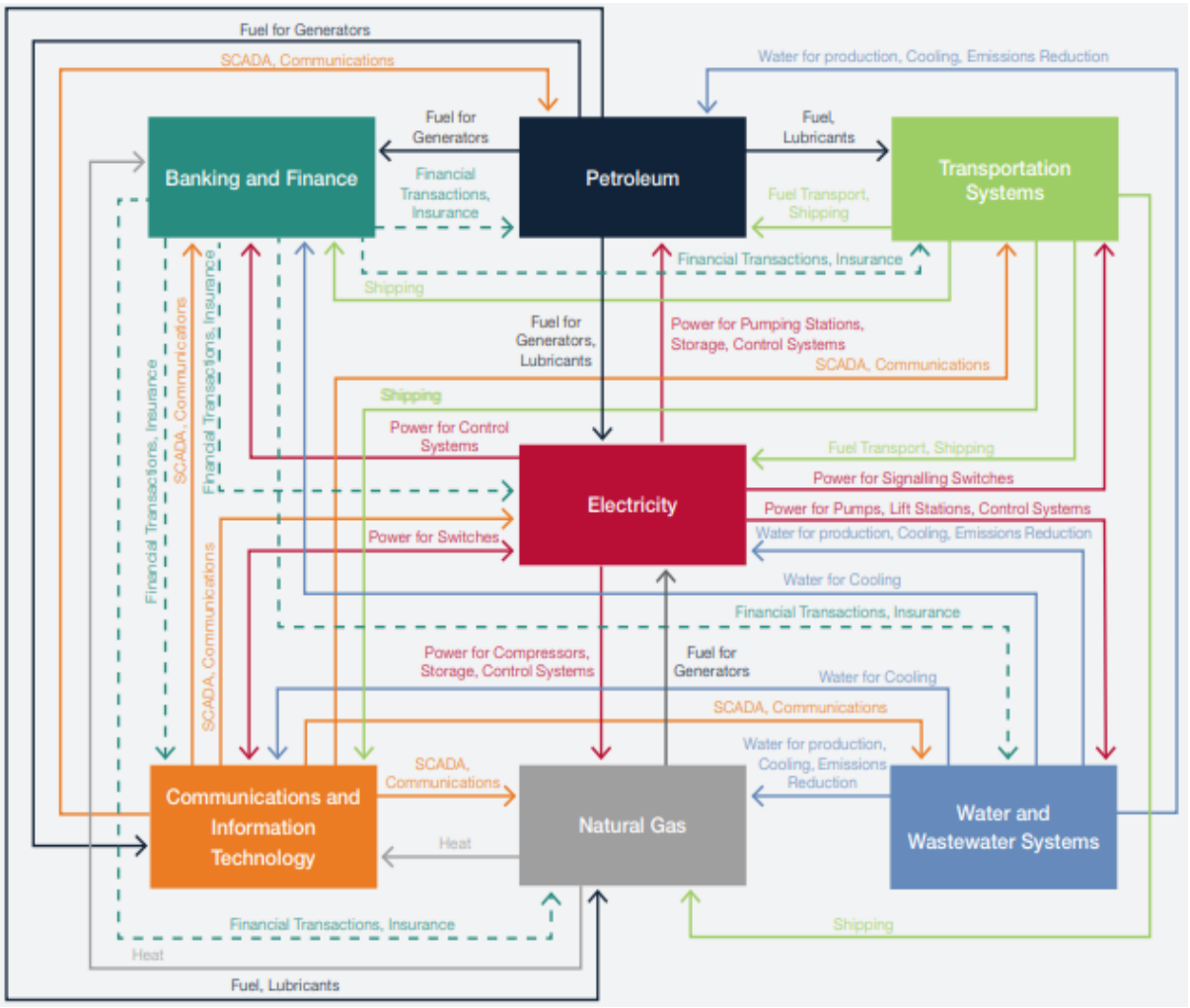

Fig. no. 1. Interdependencies between critical infrastructure systems
Source: Duane et al., 2017

2. MATERIALS AND RESEARCH METHODOLOGY

In order to make a comprehensive mapping of the activities and stakeholders specific to the continuity of the specific processes to the banking sector two distinct approaches were used.

The *DESTEP Analysis* template (specific software Mindjet MindManager) provides a broad analysis of macro factors that may impinge upon an organization's business and operations. The template (figure 2) contributes to collecting relevant information related to the demographic, economic, social, technological,

ecological and political factors that impact organizational or business operations.

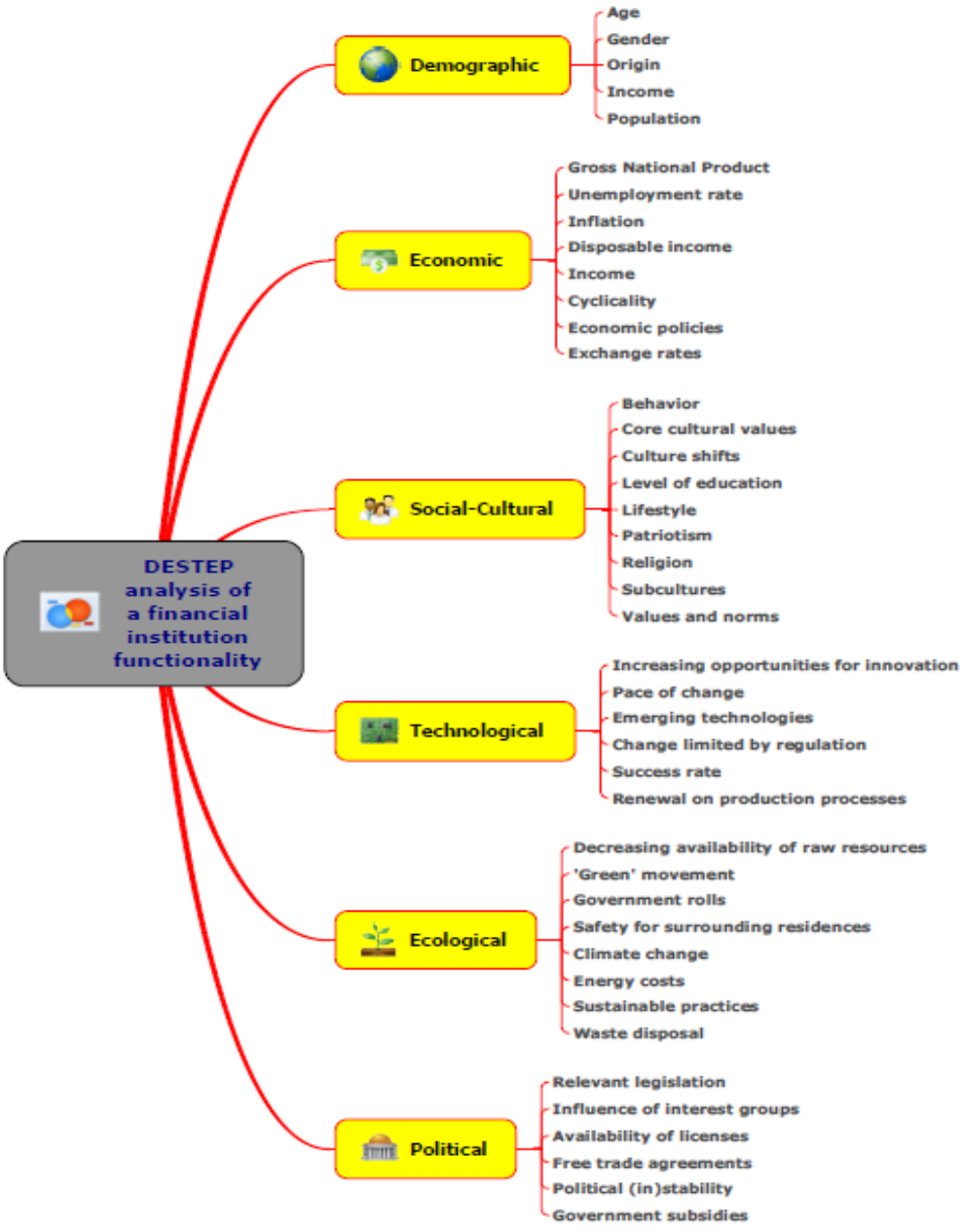

Fig. no. 2. Main and secondary factors addressed in the analysis of the functionality of the banking financial sector (generated by Mindjet MindManager)

Although the banking and financial system is perceived as powerful and invulnerable, it is permanently subject to threats caused by certain factors that have over time led to economic crises, bank failures, cyber attacks, etc.

Identifying and analyzing potential risks, certain extreme situations (which could seriously affect the optimal performance of the activity) could prevent or diminish possible effects, thus ensuring business continuity. Based on the DESTEP analysis, six categories of factors that influence, although not to the same extent, the functionality and stability of financial and banking institutions were analyzed.

a) Demographic factors

Demographic factors impact the banking - financial system both from the perspective of its

customers and from the perspective of its own employees.

The analysis of customer's profile is essential from the first contact with them, from the opening of the first account, to the granting of the first credit and until the end of the business relationship. To facilitate the selection process of their customers, banks use a tool based on statistical analysis of demographic data and payment behavior, called scoring. This scoring is not the same for all banks (although it has the same objective of establishing the customer's creditworthiness) and is reviewed periodically to be updated.

In the analysis of customer's profile, **age** is one of the factors that alone can lead to the approval or rejection of the customer's credit application. Although most banks declare through the ~~promotion~~ advertising campaigns that the minimum accepted age for accessing bank loans is between 18 and 21 years, and the maximum is 65 years (even 70 years in certain situations), the age groups up to 25 years and over 60 years are considered very high risk and in most cases are not credited.Young people between the ages of 21 and 25 are listed as unstable, being able to leave their jobs, their families and even the country very easily. Customers over 60 years old are generally credited only with life insurance, that is, if they are granted loans.

Age is a factor that applies not only to customers, but also to bank employees. A fresh employee, recently graduated from school is also unstable and, most of the time, insufficiently experien~~ne~~ced. An inexperienced employee, in whom you should invest in order to add value to the bank and who is not familiar with the term "loyalty", represents a risk for the employer. On the other hand, the employees aged between 30 and 40, who have expertise and experience in the field, have ~~greater~~ higher salary demands. Those over the age of 40 have even more difficulties in convincing banks to hire them, age being considered an impediment in this case. Due to the massive employment of young people in banks, we are witnessing the so-called "personnel trafficking", one of the problems that the banking system in Romania is currently facing.

If customers'/ employees'marital status denotes greater stability and responsibility, their **gender** does not influence the functionality of the system. It only indicates behavior in relation to banking services and products (for example, women prefer the use of cards, and men prefer "cash'). In terms of incomes, in Romania there is no major gap between the incomes of men and women occupying a similar position.Taking all these aspects into consideration, even for bank employees gender is not a relevant factor, although female employees are predominant.

Income is a decisive factor in making the decision to grant loans. When we talk about income, we also talk about its stability, its regularity, its source and the creditworthiness of the employer (an employee of the state system will have a higher score, the employer being a stable one, the income a certain one). Equally, the salary offered is a very important factor in making the decision of employment in the banking system.

The nationality of the customer also has a high impact on credit approval decision. The vast majority of banks do not credit foreign citizens, unless they have their residence in Romania, the risk of non-payment of the credit owned by them being very high. The same risk also applies to Romanian citizens who register incomes from abroad, from high risk countries, countries that are either at war or occupy top positions in the money laundering aspect (Iran, Afghanistan, and Tunisia). The employment of foreign citizens in Romanian banks is rarely encountered, for the same reasons presented above.

Another important factor that influences the functionality of the banking system is the **population**. This can impact the functionality of the system in several ways, including mobility (especially external), income statement, panic, confidence in the banking system. When the confidence of the population in the banking system decreases, massive withdrawals of money from deposits in banks take place. A conclusive example of the result of the loss of confidence is Argentina during the crisis of 2001, after which it declared bankruptcy. In Romania, as a result of the crisis in Greece (2009), the same scenario

happened, but on a much smaller scale, with withdrawals of funds from banks with majority Greek capital. At the opposite pole, as a result of the economic crises, in times of recession, the number of non-performing loans registered alarming increases.

b) Economic factors

Gross Domestic Product (GDP) is the indicator that reflects the economic activity. It is reported quarterly and indicates the entry into economic depression after two consecutive quarterly negative growth reports. An increase in GDP shows the economic development of the country, making it more attractive for investors, who in turn have easier access to credit products dedicated to them. The decrease in GDP reflects the economic downturn, which is correlated with the growth of non-performing loans and which have a result the tightening of the credit conditions of both the population and the investors.

In periods of recession and implicitly of the decrease of the GDP, **the unemployment rate** registers increases. During these periods, the economy is unable to fully utilize the labor force, creating a great imbalance between the demand and supply in the labor market. One of the solutions to reduce the unemployment rate is the professional reconversion, although in Romania this is difficult to achieve due to systemic educational syncopes. The effects of a high unemployment rate are reflected in the growth of non-performing loans.

Inflation is the general increase in prices caused by the depreciation of the national currency. Although low inflation is not a guarantee of financial stability (the 2007 economic crisis started when inflation was low), it is experiencing growth during economic crises. Population is affected by rising inflation through rising credits, due to rising interest rates.

In the economy, **the income** is the profit registered by a company and is the result of the difference between its receipts and payments. If taxes on profit are deducted from it, we are talking about a **net income** (net profit). Income is the factor that influences banks both from the perspective of their own profit, which shows major decreases during the crisis periods, as well as from the perspective of the profit recorded by credit companies, the risk of having non-performing loans being very high.

Closely linked to inflation are the **economic policies**. If they are properly coordinated, inflation is reduced, with stable consumer prices. This stability is given by a rigorous monetary policy (which avoids the surplus of money in the economy), but also by a policy of the interest rates of the granted loans (not an artificial reduction of the interest rates of the loans).

In the economy it is possible to observe the alternance of the periods of growth (boom) with those of diminution of the economic activity, correlated with the variations of the GDP. This **cyclicality**e has an effect on the functionality of the system, so that in periods of economic growth, lending is encouraged, and in periods of decline, banks are fighting for a "clean" loan portfolio, without bad loans. In general, during boom times, the behavior of economic agents is euphoric, while in crisis it is panicky.

The exchange rate also affects the banking system and, at the same time, the whole economy. The challenge of the NBR is to keep the exchange rate in line with the inflation targets. At the international level, the intervention of the states regarding the exchange rate was also felt in Romania. At the onset of the 2007 crisis, the share of foreign currency loans exceeded 50% of total loans, thus more than half of the population owing to banks was exposed to currency risk. The values of the loans and implicitly of the rates of the customers with foreign currency loans increased substantially, in some cases of loans in "exotic" currencies (CHF, JPY) the rates doubled and subsequently tripled. After the crisis of 2007, in order not to repeat the mistakes of the past, the conditions of foreign currency lending have been tightened, being accessible only to those customers who record incomes in that particular currency.

c. Socio-cultural factors

The behavior and lifestyle of bank customers / employees are factors that influence

the provision of products and services (especially lending) and the decision to hire. If there are indications of a disordered lifestyle, inclined towards excessive consumption of luxury goods and services, unjustified by the value of the income, or if there is a reliance on gambling or betting, the customer is considered ~~of~~ high risk and will not be credited, and the candidate for a job in the bank, will not be hired. There were quite many cases of insecurity in which the bank employees used the money from the bank's safes to pay the debts accumulated as a result of behavioral defects.

Religion and patriotism have had an insignificant impact on the functionality of certain credit institutions, customers of a particular religion or citizenship have been inclined to use the banking services and products promoted by certain banks from the mother countries.

The values, behaviors and attitudes of the population create its **culture**. **Cultural norms and values** are first acquired in the family and are settled with the help of institutions through education, religion or media. If the same values, behaviors and attitudes are shared by the members of an institution, the institutional culture is created. Both the cultural values and the institutional values are based on certain principles (integrity, professionalism, efficiency, independence, stability, etc.) whose respect leads to a positive interaction with everything related to the financial banking institutions.

Subcultures are often the opposite of promoters of cultural values and have a negative impact on banks. The members of the subcultures have little interest for work, they are adepts of the groups and not of the families, they are unattractive and do not represent the client/employee desired by the institutions

The level of education also has a great impact on establishing the customer's creditworthiness. Those with higher education have a higher degree of understanding of the functionality of financial systems and thus they have a good payment behavior. Also, banks only employ staff with a higher education degree.

d. Technological factors

If the factors presented above have a variable impact on the functionality of the banking financial system, the technological factors have a critical impact on it. **The rapid pace of technology development** and implicitly of **technological innovation** have helped to develop the system, digitization has reduced the processing time of banking operations and favored access to the products and services offered by them. Although the impact of technology on the banking system is a positive one, at the same time it leaves banks exposed to threats, the biggest security breach being related to cyber attacks.

The financial imbalances that have arisen over time have been ~~due~~ provoked by ~~to~~ the lack or inadequate application of internal **regulations** for monitoring and surveillance of the system. In order not to obstruct the applicability of advanced technology in the IT spectrum, a balance between prudence and innovation must be maintained.

About emerging technologies it can be stated that their presence has not yet been felt in the banking financial field, due to the restrictive regulations in the field and the fact that they have not reached an acceptable level of maturity.

e. Ecological factors

Nowadays, the ecological problems are very topical. As a result of the ecological crisis, due to environmental degradation and excessive use of **natural resources**, measures have been taken to combat **climate change** (reducing greenhouse gas emissions which cause the "greenhouse effect"), r**educing energy costs** (using renewable energy), **selective collection of waste**, applying **sustainability** strategies (use and development of new "green" technologies). Investments to ensure sustainable development and corporate sustainability have increased and are still in an upward trend with financial support from banks.

f. Political factors

Politics exerts its influence on the banking system primarily through the **legislative**

regulations. These regulations ensure the proper functioning of the banking financial system by monitoring, supervising and sanctioning it.

The **political instability** is "penalized" by the rating agencies by granting unfavorable ratings, which leads to lower investments. At the opposite end, investors gain confidence when there is **political stability**.

In times when certain sectors of the economy were in decline, the state intervened by offering subsidies, helping them to recover. The granting of these aids led to an increase in production, consumption, imports, exports, etc., all of which favoring economic growth.

The use of the CANVAS model (Osterwalder & Pigneur, 2017) was chosen to highlight some problematic aspects regarding the continuity and implicitly the criticality of the banking financial sector. It is, in fact, a map built on nine pillars of an organization (in the case of a bank) describing the reasoning behind which an organization creates and delivers value, under the influence of four macro-factors: the forces of industry (for example, competitors), key trends (for example, advanced IT technologies), market forces (for example, needs and demands), and macroeconomic forces (for example, capital markets).

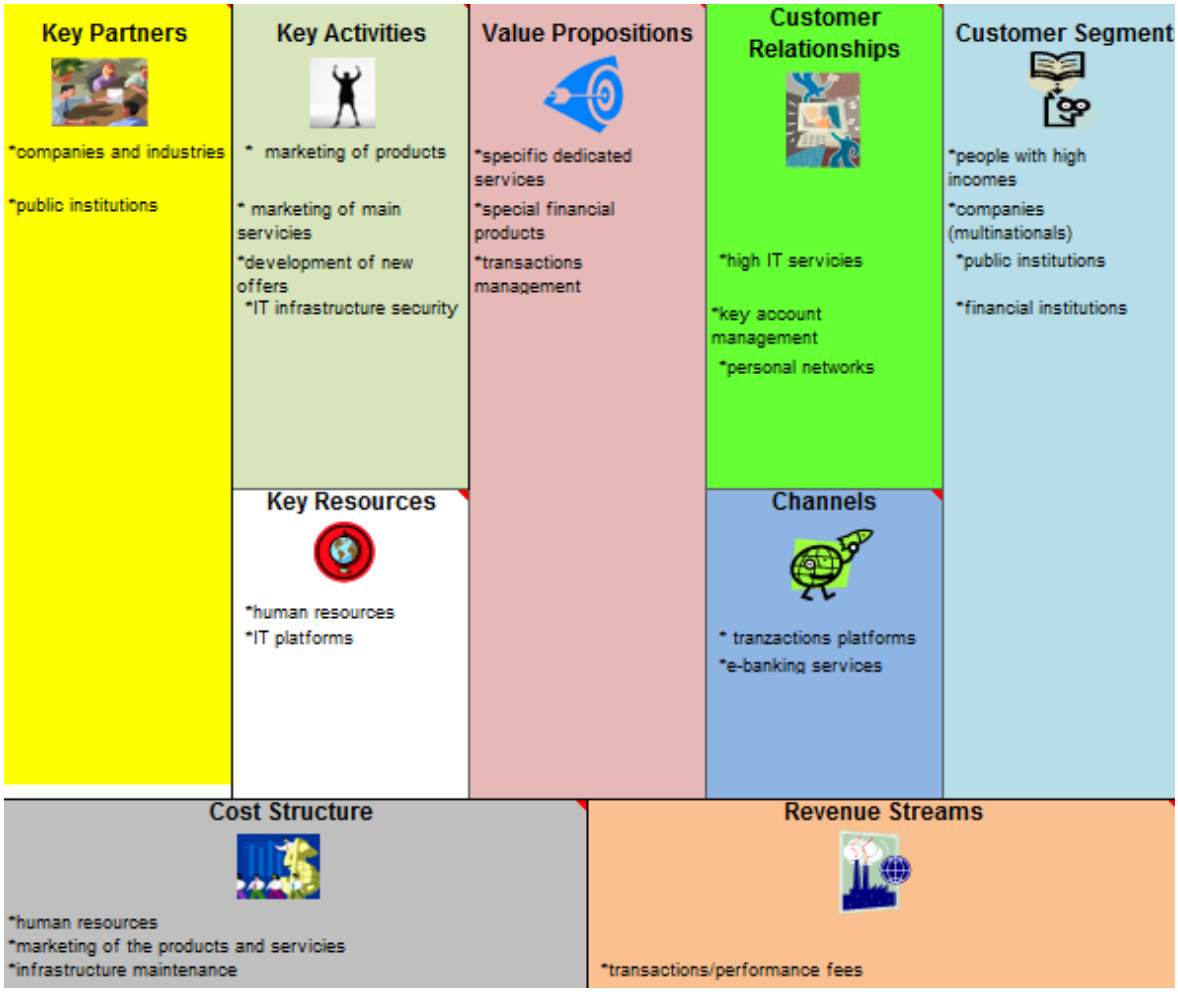

Fig. no. 3. The CANVAS model of a bank

Given the trends in the field of developing solutions for banking security (see approaches in the framework of FINSEC'19: International Workshop on Security for Critical Financial Infrastructures and Services), we note the attention of the particular model, the data regarding the physical security of the banks, the transactions' security management, integrated platforms for customer relations, security of personal data. Regarding the previous analysis,

but also in figure 1 it is useful to mention that consumers of banking services and financial products are both individuals and institutions, private or public, which in turn come and influence the continuity of financial banking business through the behavioral model specific to the culture of security formed up to that moment.

3. DISCUSSIONS AND CONCLUSIONS

Business continuity management in the banking and financial sector and itsspecific operational mechanisms must focus onharmonizationas a priority. The latter contributes to securitization, a sine qua non condition of the functionality of the physical and cyber components of these types of infrastructure. Recent events (http://innov-acts.com) such as data breach at Equifax, one of the major consumer credit reporting agencies based in Atlanta, in 2017 when there were140 million consumers affected by compromised sensitive information bring this challenge to the attention of specialist communities.

The form and severity of incidents are assessed in accordance with the specifications of the relevant standard. However,what is worth noting is that they affect the banking and finace sector and generate the domino effect in terms of the magnitude of the losses, the loss of reputation and consequently, change the perception of the population on the security of banking activities in general. The banking and financial environment as a critical infrastructure acquires even more complexity as result of the robust tendencies regarding cryptocurrency and blockchain which impose a new way in business practices based on the manner of how information is shared. That eventually leads to the need to change the paradigm of financial educationfor the population. A permanent challenge for the management of institutions belonging to this type of critical infrastructures is the efficiency of an integrated risk management system. The latter should be multidimensional, including current provisionsstipulated by the accepted standards regarding risk management / ISO 31000: 2019, information security / ISO 27001: 2013, personal data processing, etc. It is only thus that any critical infrastructure, as it is the case with the financial and banking sector in our case that all aspects of the organization are taken into account both in terms of organizationalfunctions and management functions.

REFERENCES

[1] https://www.srac.ro/ro/managementul-continuitatii-afacerii-iso-22301 accesed on 24.02.2020.
[2] ***Emergency Ordinance no. 98/2010 on the identification, designation and protection of critical infrastructures.
[3] ***Law no. 225/2018 for amending and supplementing the Government Emergency Ordinance no. 98/2010 on the identification, designation and protection of critical infrastructures
[4] Duane, V., Petit, F., and Kim, K., *Incorporating Prioritization in Critical Infrastructure Security and Resilience Programs*, Homeland Security Affairs 13, Article 7 (October 2017) available at https://www.hsaj.org/articles/14091, accessed on 19.02.2020.
[5] Osterwalder, A., Pigneur, Y., *Business model generation: un model pentru vizionari, reformatori și aspiranți*, (trad. Diana Dorobanțu), Editura Publica, București, 2017.
[6] https://images.template.net/wp-content/uploads/2016/10/06061018/Business-Model-Canvas-Template-Excel.zip accesat la 21.02.2020
[7] http://innov-acts.com/2019/11/05/securing-critical-infrastructures-in-the-finance-sector-the-top-five-challenges/, accessed on 24.02.2020.