ARTIFICIAL INTELLIGENCE, A KEY INSTRUMENT IN THE ARCHITECTURE OF FINANCIAL SERVICES AT LOCAL AND GLOBAL LEVEL

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Abstract:

The big challenges at the global level are found today in our daily life, which confirms that we are no longer under the direct influence only of the decisions at the local level but we are predominantly under the decisions at the global level, especially when we talk about financial services markets. In this context of the challenges we can say that we are in the redefinition of services, tools and not least the architecture of financial markets. Within these challenges and with a direct impact on the financial services architecture, it is artificial intelligence. Arthur Bachinskiy presented in his paper The Growing Impact of AI in Financial Services: Six Examples, these six examples of the implication of artificial intelligence in finance, respectively: AI and Credit Decisions; AI and risk management; AI and fraud prevention; AI and trade; AI and Custom Bank; AI and process automation.

In this global context, identifying the instruments for accessing financial resources, especially for those in need, is not only a priority for new economic researchers, but also a challenge in defining the architecture of financial markets, respectively identifying financial instruments, mechanisms and of financial means to ensure the sustainability of the company, respectively of social and financial inclusion.

Keywords: *artificial intelligence, financial markets, globalization and sustainable development.*

JEL Classification*: E44, F65, O31*

Introduction

We are now witnessing the great challenges at the global level, which are presently found in our daily lives, which confirms that local decisions no longer directly influence us, but we are dominated by global decisions, with all the more so when we discuss the market and the global financial services networks are subject to international regulations. In this context of current challenges we can say that we are in the stage of identifying and redefining new services, tools and not least the current architecture of financial markets. Within these great challenges and with a direct impact on the new architecture of financial services, it is artificial intelligence. Arthur Bachinskiy presented in his paper "*The Growing Impact of AI in Financial Services: Six Examples*", these six examples of the implication of artificial intelligence in finance, respectively: *AI and Credit decisions*; *AI and risk management*; *AI and fraud prevention*; *AI and trade*; *AI and custom bank*; *AI and process automation.*

In this global context, *identifying the tools and mechanisms for accessing financial resources,* especially for those in need, is not only a priority for new researchers in the economic field, but also a challenge in defining the new architecture of financial markets, respectively identifying financial instruments, mechanisms and financial means to ensure societal sustainability, respectively social, economic and financial inclusion. In many advanced economies, the great challenges are due to the growing inequalities between the poor and the rich, between those with resources and those without resources, but especially the impact of technological and climate change on economies, "*the complex impact of globalization - including those related to trade in goods, services and data, and the movement of people and capital. In emerging economies, the sharp decline in poverty and the rise of the middle class have fuelled better aspirations and*

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demands for better public goods; these requirements are now facing slower growth and tightening of government budgets. The order resulting from the adversity principle has produced an economic, financial and ideological polarization. The state we are in is one in which one (state) controls the whole (globe), manages discretionary global powers, exercises unilaterally of decisions and favours levelling diversity (including financial). In this global context, identifying the financial resources to support those who have need is not only a priori for new economic researchers, but also a challenge in identifying financial instruments, mechanisms and financial means to ensure the sustainability of societyy[68] .

Research methodology

The *methodology of the paper* will have as direct instruments the collection of data and information from the literature and from the existing practice in public and private institutions, but especially scientific articles published on specialized research networks (Research Gate, Academia.edu, etc.), articles published in different journals, relevant books in the field of reference, legislation, analyses and studies, official documents of various tax bodies, tax documents and interactive database of the Federal Banks and Central Banks, other relevant sources identified at the libraries Romanian Academy, National Bank of Romania, National and International Library, etc. Moreover, in the methodology we will analyse the documents using the comparative, analytical, descriptive method, no participative and participatory observation, and the use of a set of informational sources, the collection of financial data in the established databases. Also, the paper will be based on annual reports, publications, consolidated statistical data provided by the Federal Banks, the European Central Bank (ECB), the International Settlement Bank (BRI), World Bank, World Economic Forum, CGAP, CFI, the European Commission, OECD, published annually, data to be processed in order to be able to provide a general and analytical picture of the most important changes taking place in the globally - considered representative for the understanding of the phenomena studied.

Literature review

The advancement of financial technologies includes robotic financial trading, payments made through encrypted cashless platforms, crowdfunding financial platforms, financial consulting, technical and robotic assistance through virtual space, and not least virtual currencies so developed lately. "The value of FinTech's global investment in 2015 increased by $ 22.3 billion by 75%. Corporations, venture capital and private equity firms have invested more than $ 50 billion in nearly 2,500 FinTech companies globally since 2010 "(Financial technology (FinTech): Prospects and challenges for the EU, EPRS, Cemal Karakas, Carla Stamegna - Graphics: Christian Dietrich, 2018). However, financial technologies (FinTech), although registering a rapid growth in the virtual space, have positive aspects, especially regarding the speed with which the financial services (adapted and flexible) reach the many financially excluded, but also have risks, challenges such as be especially the data and consumer protection issues, the risk of increasing financial volatility, as well as the alarming increase of cyber-crime). The risks in particular attract the attention of the financial services regulators, and a Financial Technology Task Force (FTTF) has been set up at the European Commission, which together with the European Parliament's Committee on Monetary Affairs (ECON) made the FinTech report published in January 2017. At the global level, respectively the G20, the Financial Stability Committee (FSB) presented the report on FinTech in July 2017. The concerns at global and European level were transposed into discussions / topics / conferences and regulatory initiatives, at national level.
The defining elements for any financing model, regardless of whether we think of fintech or other types, are given by the following characteristics: *digitization* (artificial intelligence tools are crucial for digitizing services), *mobilization* (virtual space offers not only the possibility but especially the platform of realization of the mobility of people and services), *disintermediation* (virtual space offers the possibility of direct access without intermediaries), *automation* (through the financial services

[68] *The Growing Impact of AI in Financial Services: Six Examples*
https://towardsdatascience.com/the-growing-impact-of-ai-in-financial-services-six-examples-da386c0301b2

existing on the online platforms, the client and the service provider optimize their time and cost in favour of making the service profitable).
Following the widespread use of FinTech, the authorities dealing with the regulation of financial services, may face a dilemma: one based on very clear but limited rules, the regulatory frameworks clearly establish the compliance obligations of the institutions involved in financial technologies, but these are often costly from the perspective of a start-up company and could be an obstacle to innovation and the creation of new jobs; Principle-based financial regulation is more flexible, but could create some uncertainty about exactly what is expected from the point of view of compliance by those who use the services of Fintech institutions.

Figure 1 Representation of Financial Technologies (FinTech)

Source: Financial technology (FinTech): Prospects and challenges for the EU, EPRS, Cemal Karakas, Carla Stamegna, 2018

Definition of concepts according to **financial technology (FinTech):** Prospects and challenges for the EU, EPRS, Cemal Karakas, Carla Stamegna, 2018:
Blockchain: a decentralised digital ledger of economic transactions that can be programmed to record financial transactions (and more) by allowing digital information to be distributed but not copied or changed. Data packages, 'blocks', are stored in a linear chain. This technology was originally devised for the digital currency Bitcoin, but today presents other potential uses.
Crowdfunding: the use of capital from several individuals (via social media and specialised websites) to finance a business project. It allows start-up companies to raise money without giving up control to venture capital investors. In return, it often offers investors the opportunity to acquire an equity position. Critics of crowdfunding argue that funds may, for instance, be used for different purposes than those initially disclosed, or that tax laws governing e-commerce are not clearly defined, e.g. in the case of cross-border funding.
Distributed ledger: a database that is consensually shared and synchronised across multiple sites, institutions or locations. It allows transactions to have public witnesses, making cyberattacks more difficult. The participant at each node of the network can access the recordings shared. Changes or additions made to the ledger are copied to all participants.
Peer-to-peer (P2P) lending: a method of debt financing without the use of an official financial institution as an intermediary. It can also be described as 'social lending'.
Robo-advice: covers a broad spectrum of services, but essentially involves replacing face-to face investment advice with online, automated guidance and execution. It does not involve actual robots, but rather relies on algorithms or online offerings to invest money. Potentially, robo-advice could deliver financial advice in a more cost-efficient way, making it affordable for a wider range of investors and reducing the financial advice gap.

Robo-trading: a form of automated stock trading. The best known kind of robo-trading is algorithmic trading, also referred to as algo-trading and black box trading, which is a trading system that utilises advanced and complex mathematical models and formulas to make high speed decisions and transactions in the financial markets. Algorithmic trading involves the use of computer programs and algorithms to determine trading strategies for optimal returns.
Virtual currencies: digital representations of value issued by private developers and denominated in their own unit of account. They can be obtained, stored, accessed, and transacted electronically, and can be used for a variety of purposes, as long as the transacting parties agree to use them. The concept of virtual currencies covers a wider array, including internet coupons, airline miles, and crypto currencies such as Bitcoin.
The current process of financial technologies and the definition of financing models start primarily with the contribution of digital technologies to the development of the financial industry, as can be seen in the graph below.

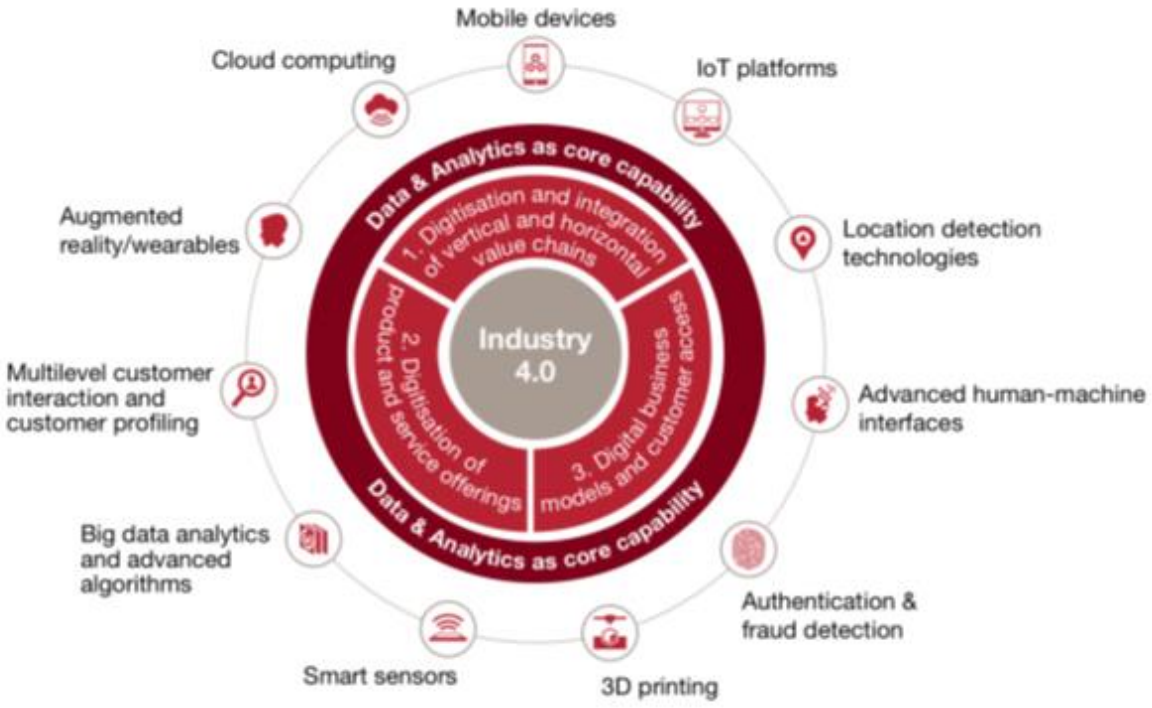


Figure 2. Industry 4.0. Framework and contributing digital technologies

Source: PwC report, 2019

The ***process of globalization*** inevitably leads to the reconsideration (conceptual reconstruction) of the paradigm of growth and economic development, and especially in financial technology (Fintech). The challenge, on the one hand, of the depletion and / or deterioration of resources (especially natural) and, on the other hand, of our optimization model - maximizing the objective functions of economic actors - is likely to require a radical change the options and the means by which we address this important activity of the individual and society: economic activity.
At the same time, it is obvious that economic activity can no longer be regarded in itself as a mode governed by a distinct rationality distinct from others, rationality based on a consistent and sufficient logic. Logic and economic rationality must accept, under the pressure of global problems, a permanent and fundamental communication with the other logic of individual and social behaviour (praxis). In addition, they must accept the possibility and desirability of re-evaluations, repositions, or even refunds, in light of the new paradigms of the economic process (including paradigms, for the time being, academic, such as the entropic model).
Sustainable development (or growth) is a direct function of resources of the same category, i.e. sustainable resources, inclusive financial resources. The subject of this study is the research of a special resource, namely the financial technology (FinTech).

Studying this resource from a sustainable development perspective will lead us to the proposal and the conceptual, methodological and technological development of what we will call a sustainable financial resource. For its part, the concept of a sustainable financial resource will generate some considerations about the sustainable sources of financial resources, including Fintech - our ultimate goal, on the other hand. As we develop more broadly at the right time, the financial sources for sustainable development are more sustainable financial sources for development. This is not just a game of words but an emphasis on an extremely important idea, namely the idea that points to the depth of the sustainability feature.
Since, as will be demonstrated, the financial resource (and, as a consequence, the source of the FinTech resource) is one of the foundations of any economic process, it is natural that our attention goes to ensuring this foundation in terms of sustainability in order to be able to speak with some justification and confidence about sustainable economic processes (systems).

Research results

In our research there is a constant increase of artificial intelligence in the financial industry, which shows us how quickly the business landscape changes, even in areas where traditional finance has remained conservative. The most popular examples regarding the involvement of artificial intelligence in finance were mentioned this year by Arthur Bachinskiy. Here are just a few of the most popular examples of AI in finance (Arthur Bachinskiy, 2019).
1. Influence of lending decisions through artificial intelligence decisions
Artificial intelligence offers a faster and more accurate assessment of a potential borrower, with lower costs and represents a wider variety of factors, leading to a better informed, data-driven decision. The credit score offered by AI is based on more complex and sophisticated rules compared to those used in traditional credit scoring systems. It helps creditors distinguish between high-risk applicants and those who are credit worthy, but do not have an extended credit history (*Arthur Bachinskiy, 2019*). Objectivity is another benefit of the mechanism fuelled by AI. Unlike a human being, a car is unlikely to be biased.
Digital banks and lending applications use machine learning algorithms to use alternative data (for example, smartphone data) to evaluate loan eligibility and to provide customized options. US auto lending companies have also reported success to AI for their needs. For example, this report shows that bringing AI on board reduces losses by 23% annually.
2*. The direct link between risk management and artificial intelligence* - it is difficult to overestimate the impact of AI on financial services when it comes to risk management. The enormous processing power allows the handling of large amounts of data in a short time, and the cognitive calculation helps to manage both structured and unstructured data, a task that would take too long for a human.
The algorithms analyse the history of risk cases and identify early signs of potential future problems. Artificial intelligence in finance is a powerful ally when it comes to analysing real-time activities in any given market or environment; the accurate forecasts and detailed forecasts they provide are based on several variables and essential for business planning.
3. The role of artificial intelligence in preventing fraud in the financial-banking field
In recent years, artificial intelligence has been very successful in combating financial fraud - and the future looks brighter every year, as machine learning is approaching criminals. AI is particularly effective for preventing credit card fraud, which has grown exponentially in recent years due to the growth of e-commerce and online transactions.
Fraud detection systems analyse customers' behaviour, location and purchasing habits and trigger a security mechanism when something seems inconsistent and contradicts the established spending pattern. Banks also use artificial intelligence to reveal and prevent another infamous type of financial crime: money laundering. The cars recognize the suspicious activity and help reduce the costs of investigating the alleged money laundering schemes. A case study reported a 20% reduction in investigative work volume (Arthur Bachinskiy, 2019).
4. The impact of artificial intelligence on trade
Data-driven investments have grown steadily over the past 5 years and closed by $ 1 trillion in 2018. They are also called algorithmic, quantitative or high frequency transactions. This type of trading has expanded rapidly in the stock markets of the world and, for one reason: artificial intelligence offers multiple significant benefits.

Intelligent trading systems monitor both structured data (databases, spread sheets, etc.) and unstructured data (social media, news, etc.) in a fraction of the time it takes for people to process it. And nowhere does it say "time is money" more true than in trading: faster processing means faster decisions, which in turn means faster transactions.

5. The direct link between artificial intelligence and personalized financial institution

Artificial intelligence really shines when it comes to exploring new ways to provide additional benefits and comfort to individual users. In the banking sector, AI provides smart chatbots that offer customers complete self-help solutions, while reducing call centre workload. Voice-controlled, virtual assistants powered by smart technology, such as Amazon's Amazon, gain traction and speed, which is not surprising: they pride themselves on a self-education function, become smarter every day, so you should expect extraordinary improvements here. Both tools can check balances, schedule payments, search for account activity, and more.

A number of applications offer personalized financial advice and help individuals achieve their financial goals. These smart systems track incomes, recurring expenses and spending habits and come up with an optimized plan and financial advice. The largest banks in the US, such as Wells Fargo, Bank of America and Chase, have launched mobile banking applications that provide customers with reminders to pay bills, plan expenses and interact with their bank in a way easier and more efficient, from obtaining information to completing transactions.

6. The impact of artificial intelligence on process automation

Industry leaders who are thinking about the future are pursuing the automation of robotic processes when they want to reduce operational costs and increase productivity.

Intelligent character recognition makes it possible to automate a variety of time-consuming, time-consuming tasks that have taken thousands of hours of work and inflating wages.

The software activated on artificial intelligence verifies the data and generates reports according to the indicated parameters, examines the documents and extracts information from the forms (applications, agreements, etc.). The use of robotic process automation for high-frequency repetitive tasks eliminates the room for human error and allows a financial institution to reorient labour efforts in processes that require human involvement. Ernst & Young reported a 50% -70% cost reduction for these types of tasks, and Forbes calls it "*Gateway Drug to Digital Transformation" (Arthur Bachinskiy, 2019).*

A leading financial company, JP Morgan Chase, has been successful for some time with Robotic Process Automation (RPA) to perform tasks such as extracting data, complying with customer knowledge and capturing documents. RPA is one of the "five emerging technologies" that JP Morgan Chase uses to improve the cash management process.

Financing tools and mechanisms directly influenced by artificial intelligence have the following specific attributes, respectively: digitization, mobilization, augmentation, disintermediation, automation[69].

[69] *YouTube; Digital transformation: are you ready for exponential change? Futurist Gerd Leonhard, TFAStudios*

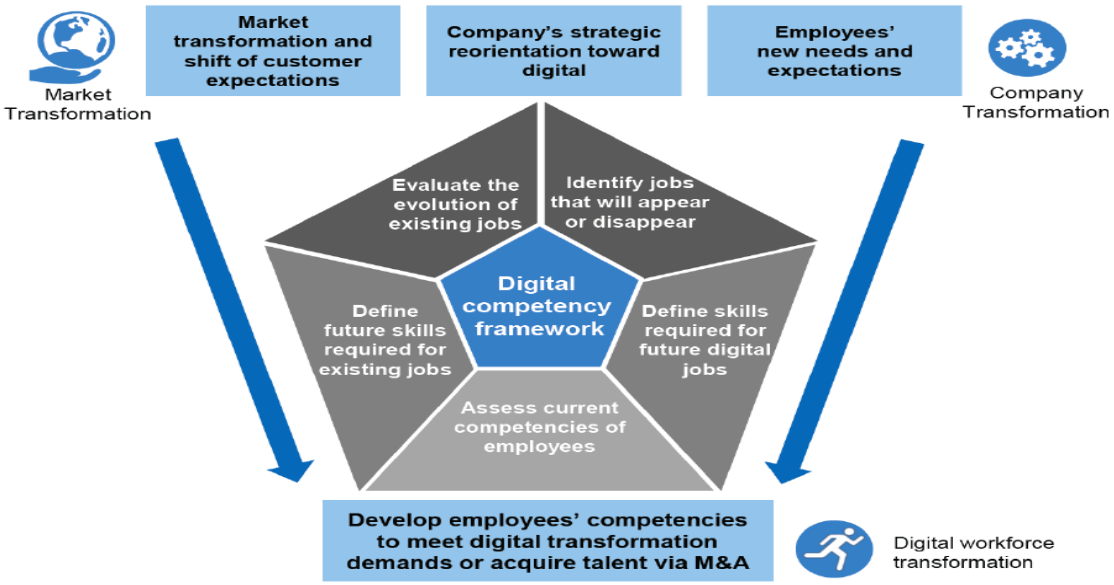


Figure no.3. Digital competency framework

Source: Accenture, 2018

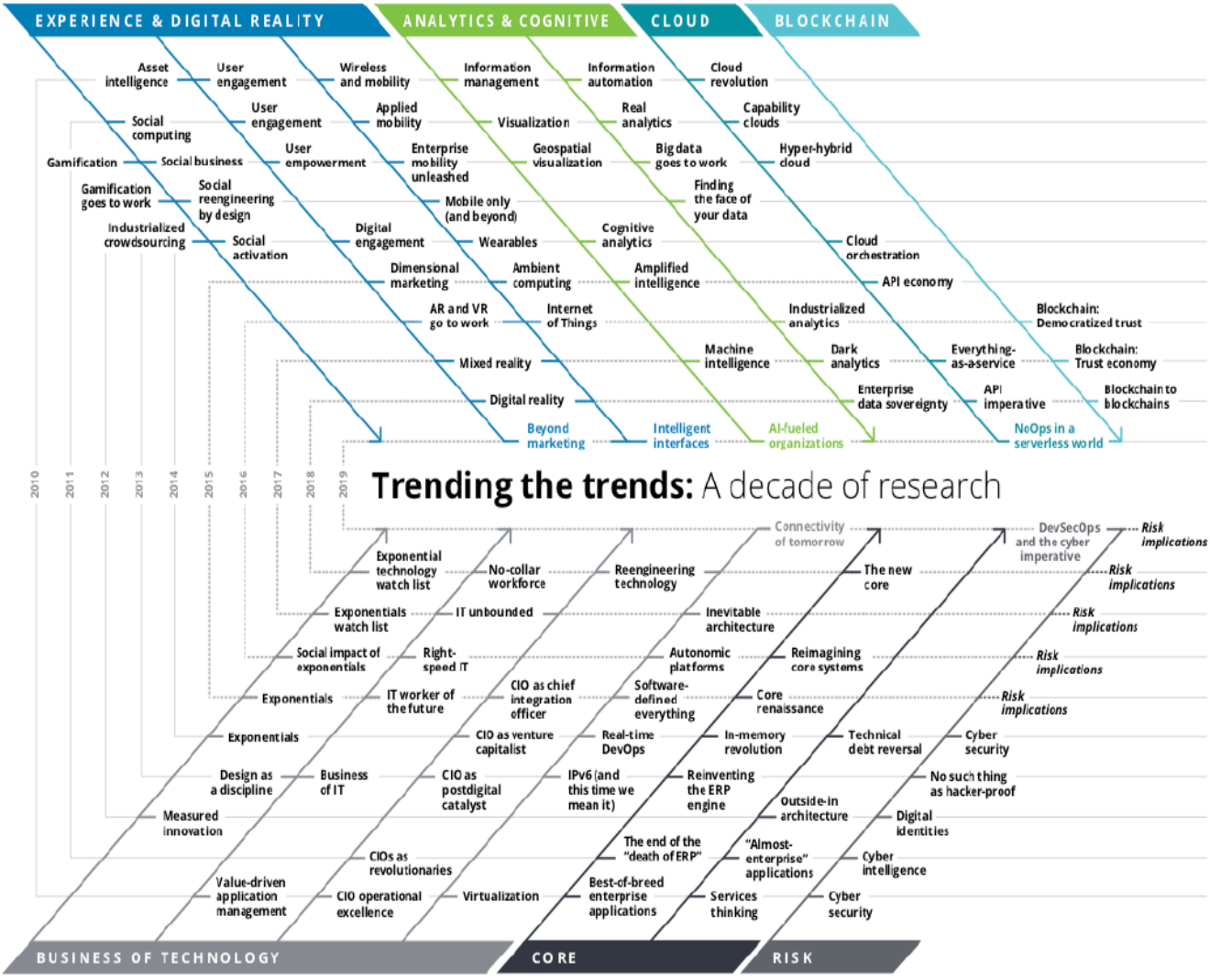


Figure 4. Current trends of research with impact on finances

Source: Prof. Adrian Curaj, research paper2040 Quo Vadis Romania?, 2019

In order to be able to develop financial instruments and mechanisms in line with current trends globally and under the direct influence of artificial intelligence, we believe that adapting to current digital financial technologies and creating models using them is the basic pillar in the development of the new architectures of financial services connected on the one hand to the real needs of the society, but especially connected to the global trends as they are reflected in the figure above.

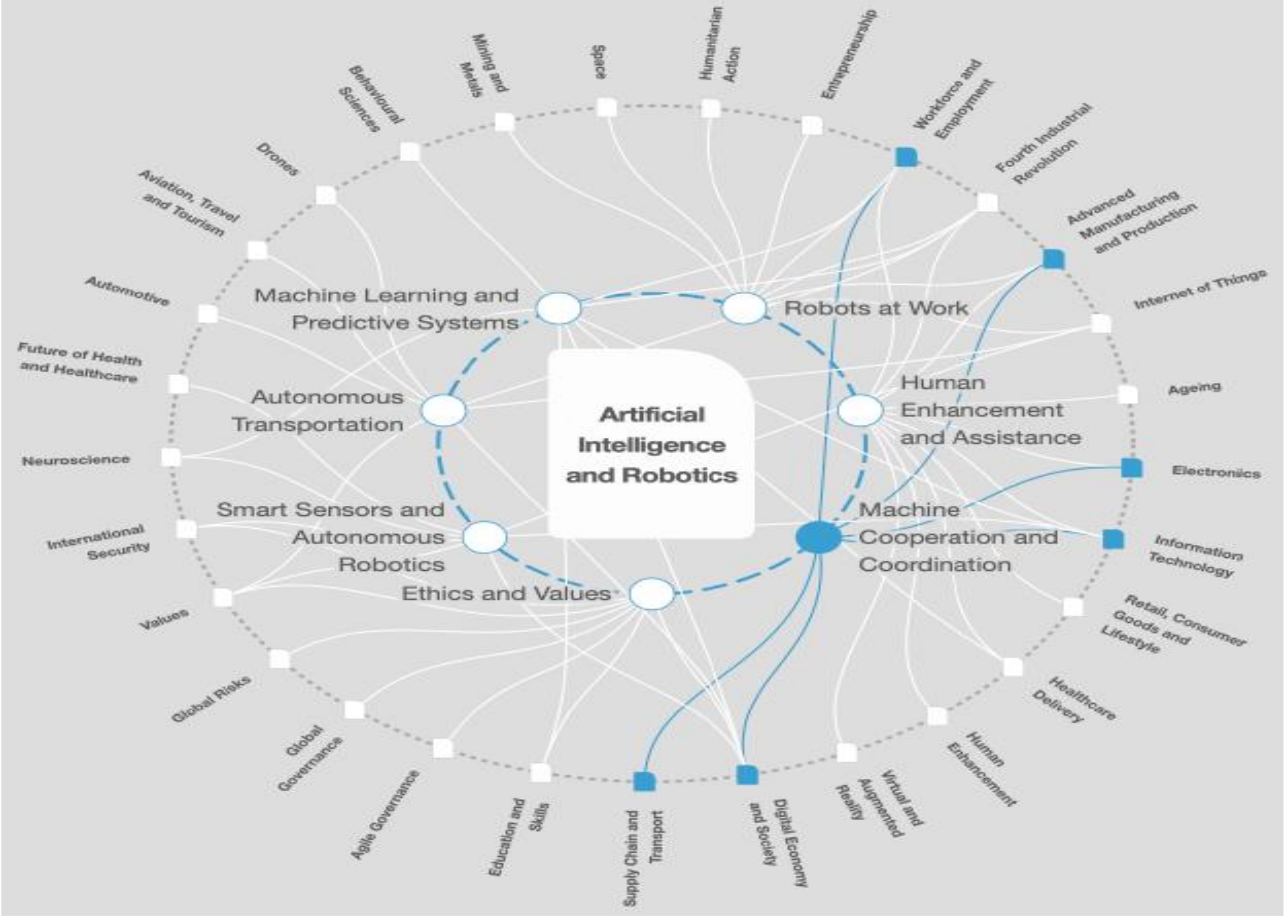


Figure 5. Artificial Intelligence and Robotics

Source: World Economic Forum, 2019

Between artificial and robotic intelligence for finance, there is a direct connection and a direct impact on the service provided in the financial-banking field. Moreover, many of these services will be provided directly by robots as a result of the resource optimization process, as can be seen in the figure above.

The trend of digitization is not just in the field of finance, it is found in the vast majority of the economic branches. In our work to reflect the impact of artificial intelligence on the real economy, we will also find our analysis on the main indicators of stability of the real economy.

The holistic approach of the phenomenon of expansion of financial innovations, respectively of current financial technologies, as otherwise abbreviated to FinTech, knows very specific elements and adapted to the global financial context, and lately the share of financial services in the virtual space is dominant compared to their traditional form. Moreover, this new financing instrument has arisen mainly due to the need to streamline the financing system, based on technology, either to provide financial services adapted to the current needs of consumers (especially those who are in need of financing, this is also the real reason for the fintech coupling of the financial inclusion of the financially excluded), as well as the design of new financial products that are reliable and responsive to the market. The impact of these financial technologies will be directly on the real economy, more precisely its digitalization.

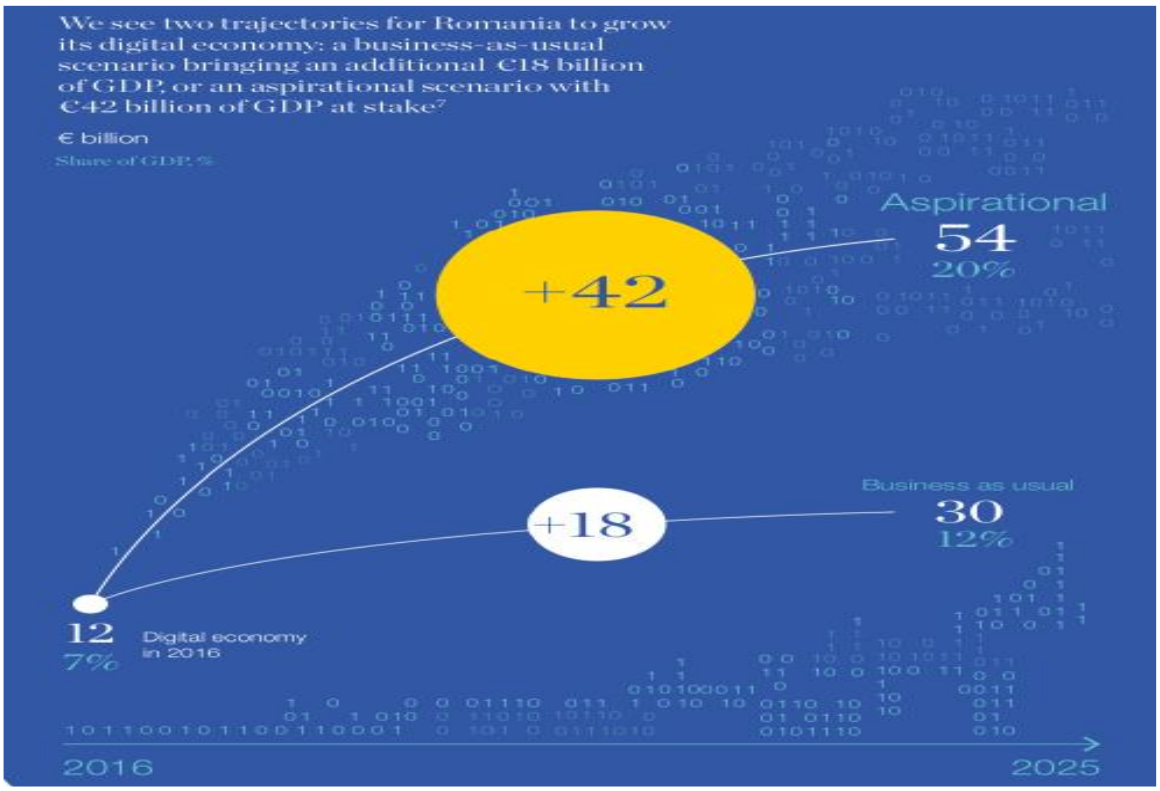


Figure 6. Scenarios regarding the digitization of the economy in Romania

Source: McKinsey, The rise of Digital Challengers, Perspective on Romania, 2018

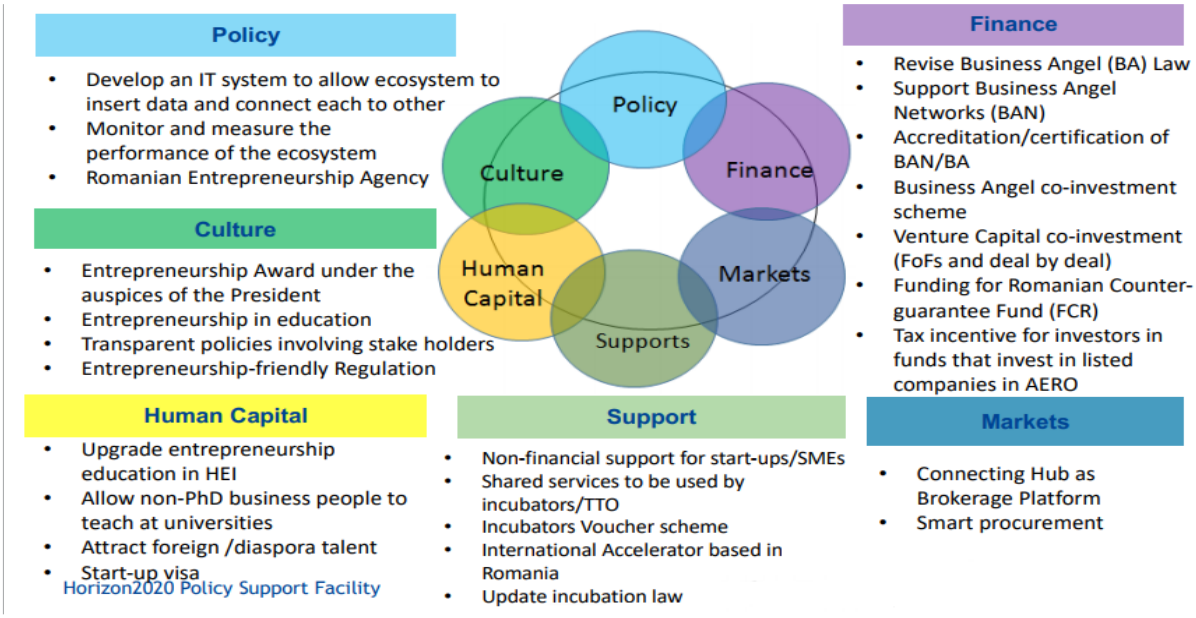


Figure 7.Transforming accelerators in Romania: EC Recommendations

Source: H2020 PSF Report, 2017

In order to be able to estimate at national level our capacity for innovation, technological transfer and entrepreneurship, especially in the financial field, we consider that besides the elements related to intelligent specialization, industrial transformation, a knowledge of the real economy at the level of each state could lead to the realization a financial architecture based on both the combination of the traditional form of financing and the current financial technologies.

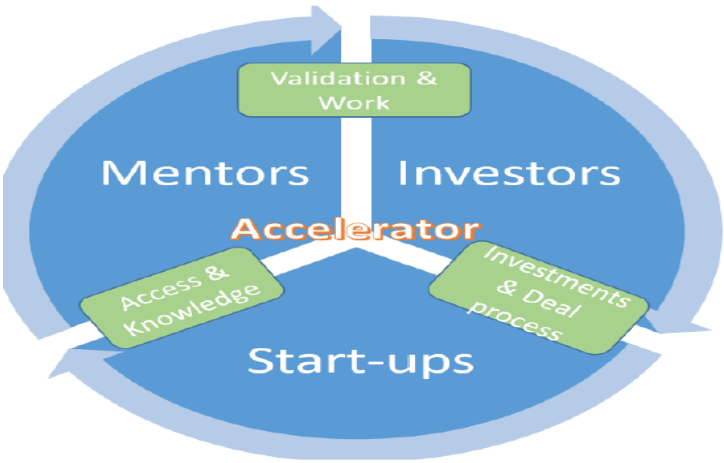


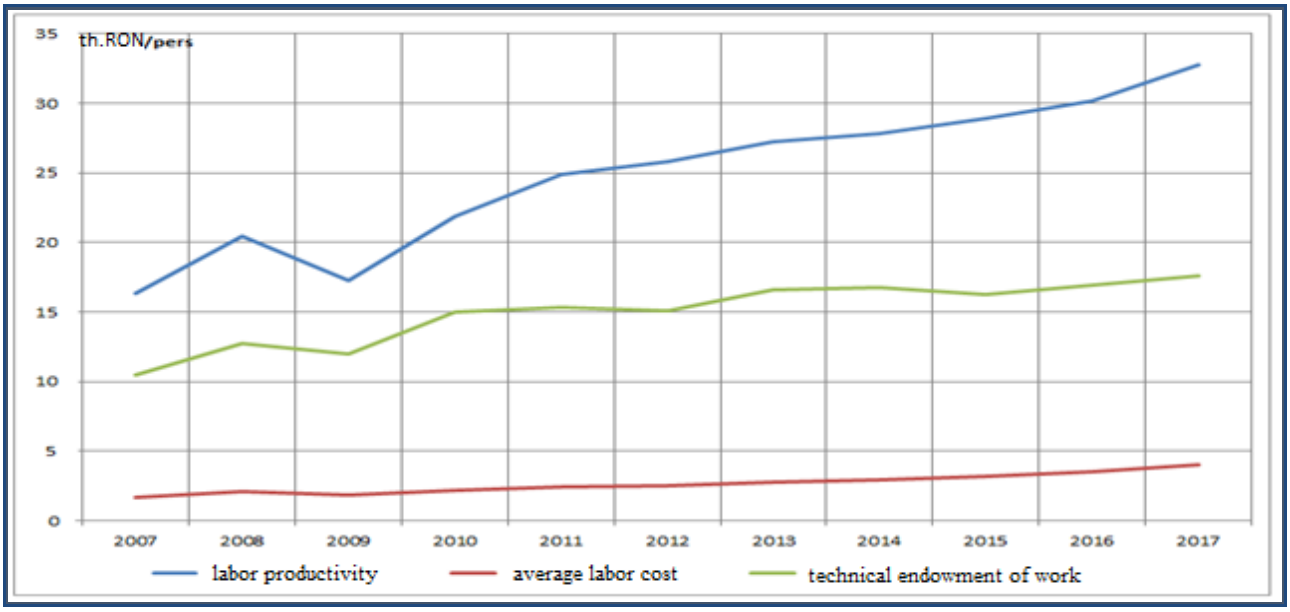
Figure 8. The business accelerator model in the context of AI

Source: H2020 PSF Report, 2017

In order to be able to rethink the architecture of financial services, in the context of the real economy (direct beneficiary of the finances), as well as the impact of artificial intelligence on these economic sectors, we consider that we should reflect some relevant information about the real economy, more precisely the reference indicators regarding the financial state of the real economy. In this sense we can exemplify at the level of Romania through the data published in the work of the Financial Statement of Romania, the 2018 edition, realized by the Centre for Financial and Monetary Research "Victor Slăvescu" within the Romanian Academy.

To capture the evolution of the real economy, as reflected in the above work, the following groups of performance indicators are calculated, namely: labour productivity, unit labour cost and technical endowment of labour; gross profitability of income, profitability of resources consumed, net operating margin rate; general solvency, immediate solvency, global solvency; self-financing rate, general debt ratio, debt ratio; own working capital rate, immediate liquidity rate, financial stability and debt repayment period.

The first category of indicators is given by labour productivity, unit cost of labour and technical endowment of labour. The dynamics of some performance indicators related to the degree of labour use in the total real economy are presented in the graph below.



Graph 1. Evolution of labour productivity, average labour cost and the technical endowment of work in the period 2007-2017

Source: Financial Statement of Romania, 2018 edition, Centre for Financial and Monetary Research "Victor Slăvescu", Romanian Academy

The methodology of calculating *labour productivity (in financial expression)* is given by the following calculation formula, respectively:

$$W_f = \frac{Ca}{Ns}$$

where, *Ca = Turnover* and *Ns = Number of employees*.

It is noted that during the period analysed, there were obvious increases in the value of the chosen indicators. Beyond the fact that all these indicators are based on a value expression of labour (labour cost), we observe the close and positive correlation between labour productivity, technical endowment of labour (including AI) and average unit labour cost. The impact of AI is also on the indicator the average labour cost, an indicator that is calculated according to the following calculation formula, respectively:

$$C_m = \frac{Csa}{Ns}$$

where, *Csa = personnel costs* and *Ns = Number of employees*

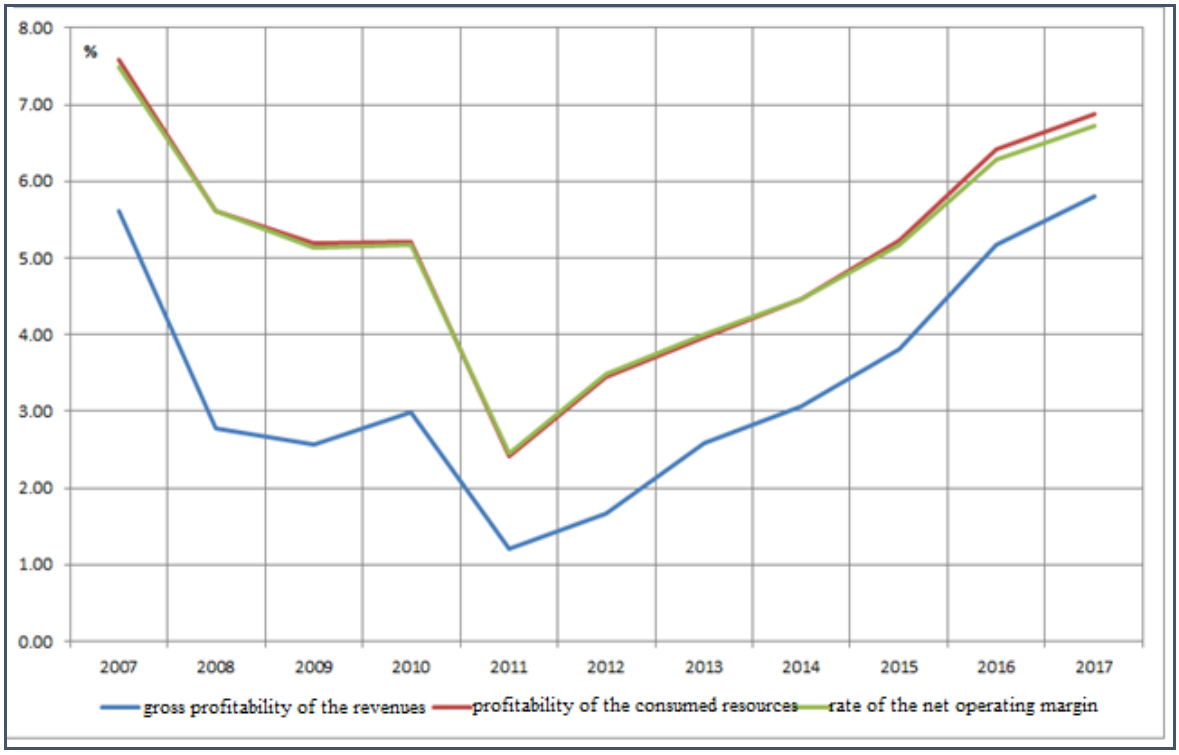
Labour endowment indicator (in financial expression) is calculated according to the following formula, respectively:

$$\hat{I}_m = \frac{Mf}{Ns}$$

where, *Mf = Total fixed assets* and *Ns = Number of employees*.

The second category of relevant indicators is given by *the gross profitability of the revenues, the profitability of the consumed resources, and the rate of the net operating margin.*

The dynamics of some performance indicators related to the total results, in the real economy are presented in the graph below.



Graph 2. Evolution of the gross profitability of the revenues, the profitability of the consumed resources and the rate of the net operating margin during 2007-2017

Source: Financial Statement of Romania, 2018 edition, Centre for Financial and Monetary Research "Victor Slăvescu", Romanian Academy

It is observed that there is a close correlation between the dynamics of these three indicators of economic-financial performance. The negative effects of the economic-financial crisis began to manifest since 2008, but most obviously in 2011, when the rate of return on resources consumed and the rate of net operating margin reached a "historical" minimum. It is also noted that not even in 2017, after 11 years, the level of 2007 was not reached (only in the case of the gross profitability of the revenues, and only in 2017).
The rate of return of income was calculated using the following formula, respectively:

$$R_v = \frac{Pbt}{Vt} * 100$$

where, *Pbt = gross profit* and *Vt = total income*.
The *rate of return of consumed resources* indicator was calculated according to the following formula:

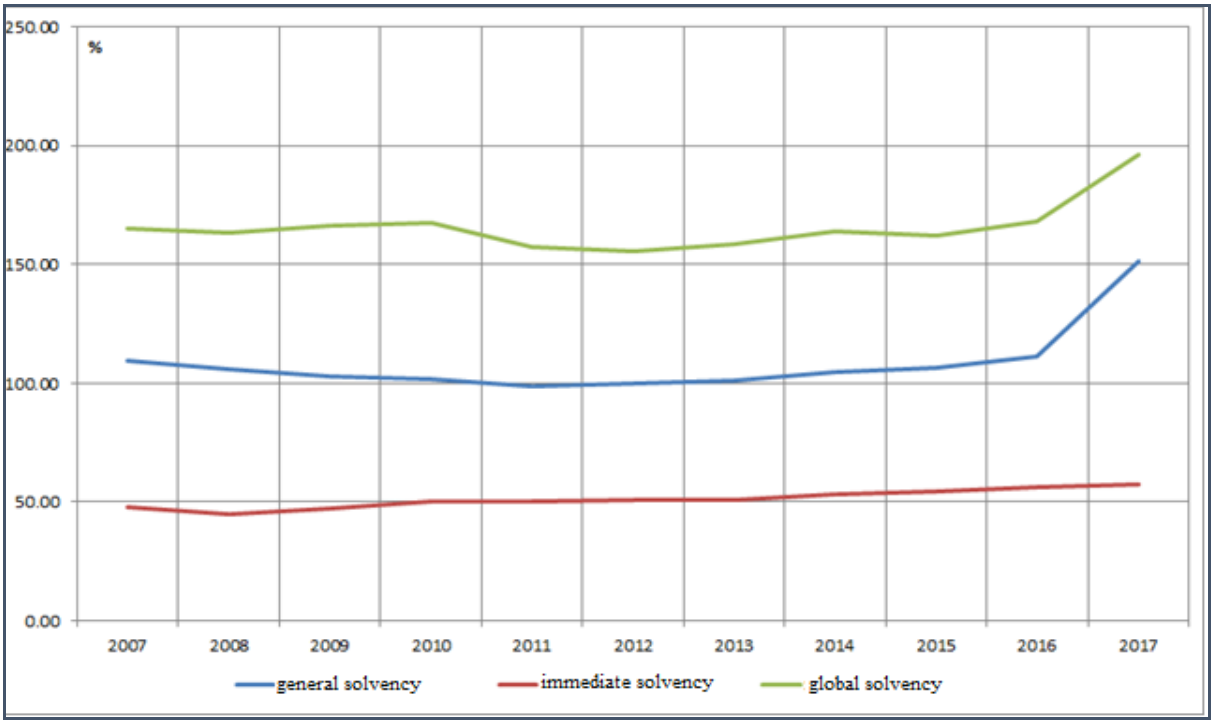
$$R_c = \frac{Pbe}{Ce} * 100$$

where, *Pbe = gross operating profit* and *Ce = operating expenses*

The *net operating margin rate indicator* is calculated according to the formula below, respectively:

$$R_{mn} = \frac{Pbe}{Ca} * 100$$

where, *Pbe = Gross operating profit* and *Ca = turnover.*
The category of indicators *general solvency, immediate solvency, global solvency* is another reference category in the context of digitizing the real economy.
The evolution of some solvency indicators, in the real economy, for the period 2007-2017 is presented in the graph below.



Graph 3. Evolution of general solvency, immediate solvency and global solvency over the period 2007-2017

Source: Financial Statement of Romania, 2018 edition, Centre for Financial and Monetary Research "Victor Slăvescu", Romanian Academy

From the point of view of the general solvency, as well as of the global solvency, there is a tendency to increase the level of these performance indicators over the last 6 years (with a significant increase in 2017), on a general trend of stability. In contrast, immediate solvency has a tendency to stabilize, around 50%.

The *general solvency indicator* is calculated according to the formula below, respectively:

$$S_g = \frac{Ac}{Dc} * 100$$

where, *Ac = Current assets* and *Dc = Current liabilities*.

The *immediate solvency indicator* is calculated according to the formula below, respectively:

$$S_i = \frac{Ac - St}{Dt} * 100$$

where, *Ac = Current assets*, *St = Stocks* and *Dt = Total liabilities*

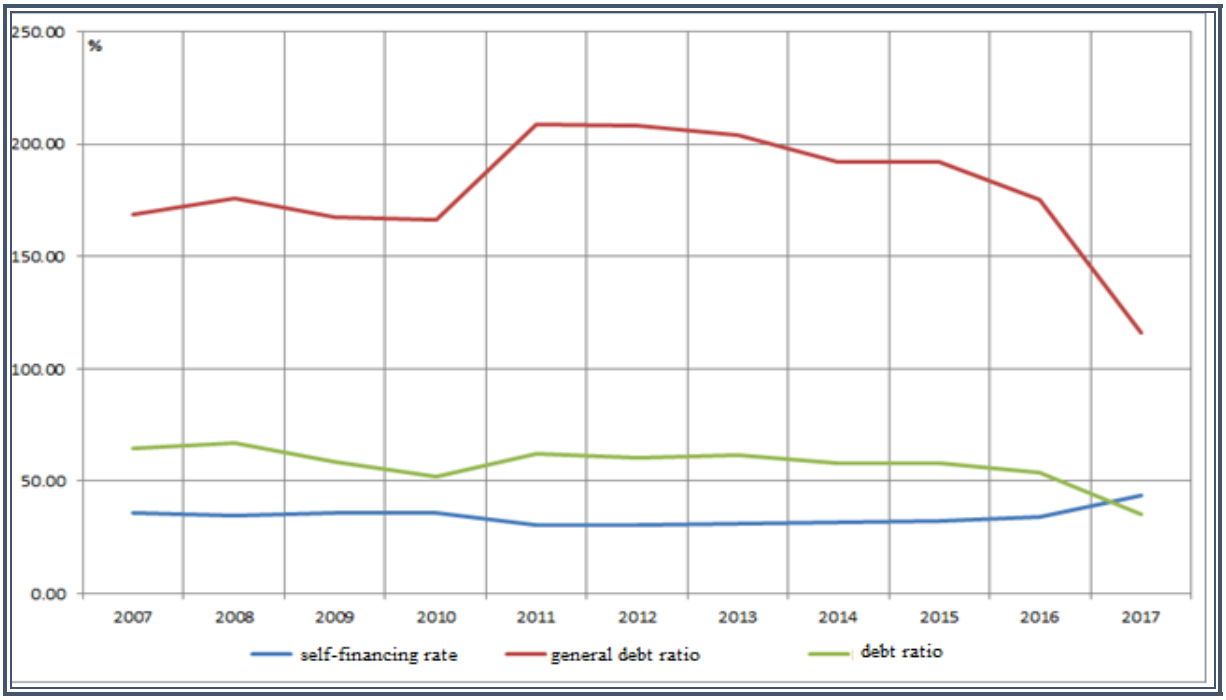
The *Global Solvency indicator* has been calculated based on the formula below:

$$S_{gl} = \frac{At}{Dt} * 100$$

where, *At = Total assets* and *Dt = Total debts*

The category of indicators the self-financing rate, the general debt ratio, the debt rate reflects the capacity of the companies in the real financing economy, moreover this indicator shows us not only the form of financing the real economy, but especially its opening to the current financial technologies or their degree of conservation. The high percentage of self-financing shows us a resistance of the Romanian companies to the traditional forms of financing. However, given the structure of the real economy, the phenomenon of digitization will be a fact, which is why we estimate in the near future a decrease in the percentage of self-financing of Romanian companies and an increase in the degree of financing through the existing financial technologies globally and which also entered the Romanian market.

The dynamics of some performance indicators directly related to the financing process in the real economy are presented in the following graph.



Graph 4. The evolution of the self-financing rate, the general debt ratio and the debt ratio in the period 2007-2017

Source: Financial Statement of Romania, 2018 edition, Centre for Financial and Monetary Research "Victor Slăvescu", Romanian Academy

It is observed that there is a positive and intense correlation between the dynamics of the self-financing rate and the debt rate and a tendency of stability of the level for the last years. During the period analysed, the general debt rate has a clear tendency to decrease, the phenomenon being more evident for the period 2012-2017, after the maximum level reached in the period 2011-2012. In 2017, the level of this indicator reached a level below that reached in 2007 (Manta O., Dimitriu M. (2018).

The *self-financing rate indicator* of the assets was calculated according to the following formula, respectively:

$$R_a = \frac{Cpr}{At} * 100$$

where, *Cpr = Equity* and *At = Total assets*.

The *general debt ratio indicator* has been calculated according to the following formula, respectively:

$$R_i = \frac{Dt}{Cpr} * 100$$

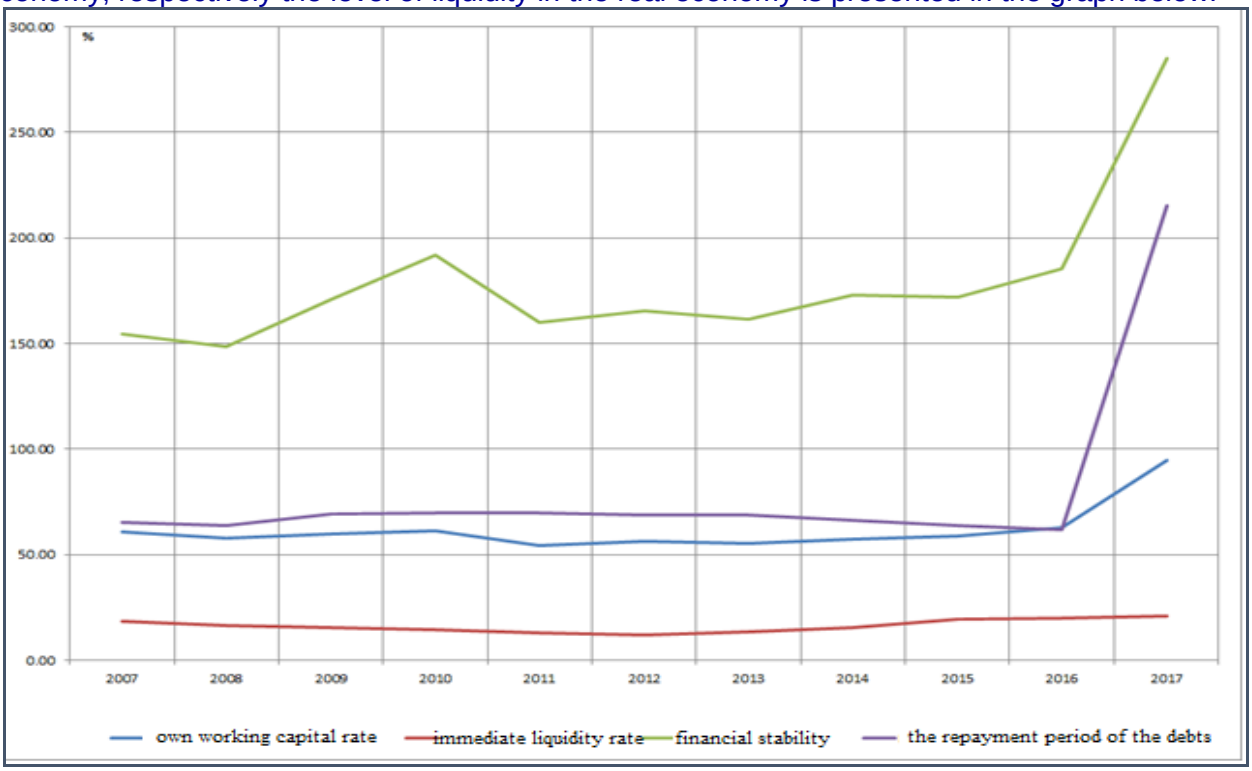
where, *Dt = Total debt* and *Cpr = Equity*.

The *Financial Debt Rate indicator* has been calculated according to the following formula, respectively:

$$R_{df} = \frac{Dml}{Cpr} * 100$$

where, *Dml = Medium and long term debt*, respectively *Cpr = Equity*

The category of indicators the ratio of the own working fund, the rate of immediate liquidity, the financial stability and the period of repayment of debts, confirms our performance in the real economy, respectively the level of liquidity in the real economy is presented in the graph below.



Graph 5. Evolution of the own working capital rate, of the immediate liquidity rate and financial stability in the period 2007- 2017

Source: Financial Statement of Romania, 2018 edition, Centre for Financial and Monetary Research "Victor Slăvescu", Romanian Academy

While own working capital and financial stability tend to recover over the last three years, after the minimum level in 2011-2012, the immediate liquidity rate continues to remain at a level close to that reached in 2007 regards the repayment period of the debts, a significant increase is observed in the last year of the analysed period. This fact can be justified by a migration of the behaviour of the companies to a certain type of transactions, to the detriment of the financial stability in the medium and long term (Manta O., Dimitriu M. (2018).
Indicator *The rate of own working capital (equity financing)* is based on the following calculation formula, respectively:

$$R_f = \frac{Cpr}{Mf} * 100$$

where, *Cpr = Equity* and *Mf = Fixed assets*

The *immediate liquidity rate* is calculated according to the formula below, respectively:

$$R_{li} = \frac{Disp}{Dc} * 100$$

where, *Disp = availability* and *Dc = current debts*

The *Financial Stability indicator* is most relevant to the state of the real economy at a given time, and is calculated according to the formula below, respectively:

$$S_f = \frac{Cpr}{Dml} * 100$$

where, *Cpr = Equity* and *Dml = Medium and long-term debt*

Conclusions

The experience of the current challenges regarding artificial intelligence offers sufficient useful elements, so that the deficiencies found can be reduced/eliminated. Financial stability at global and local level is an increasingly important phenomenon with a direct impact on financial inclusion.
Due to technological innovation, artificial in-law in the financial field could bring financial services (loans, guarantees, insurance, etc.) as close to people, especially to small entrepreneurs, and as close to their needs, actively contributing to financial inclusion in global level of the many non-banks.
At the international level, the Financial Stability Board (FSB) of the G20 began in April 2016, examining the potential risks that FinTech could present for global financial stability. FSB is currently conducting a mapping exercise that focuses on the impact of digitization and FinTech in the financial sector and the possible implications for the banking sector, which is closely monitored. At the same time, there are attempts at EU level to collect the links between FinTech, information and data and to explore how FinTech companies can tackle the cross-border issue, namely taking over financial services and financial inclusion. In its first status report on (CMU), the Commission foresees, in its CMU action plan, a comprehensive assessment of European markets for retail investment products, including distribution channels and investment advice, by the end of 2019.
The evaluation will be based on the contribution of the experts and to consider "whether retail investors can have adequate access to products on cost-effective and fair terms and if the potential offered by us the possibilities arising from online services and other technologies that they must to make financial services more efficient (FinTech) are being exploited The representatives of the European Commission have expressed the objective of understanding the FinTech sector and its players better, as well as assessing its impact on the banking sector and the non-banking financial institutions sector, respectively the services sector and its current players.
The effects of the absorption of digital financial technologies in the consolidation of the Romanian economy would be amplified by creating the conditions for the access of the domestic companies to the Fintech financial solutions, in order to stabilize the workforce and to consolidate the technological base at local level and with global impact.
Moreover, by developing digital financial instruments, as well as by digitizing the real economy, we could assist in better managing the European programs involved in financing the strategic sectors at European and national level.

The role of financial instruments is increased: Romania is among the last states in the use of financial-banking instruments and extensive efforts are needed to multiply the effect of using European funds to finance the economy.
The way in which artificial intelligence in the financial field has penetrated the development of financing tools and mechanisms directly adapted to the consumer, respectively the way in which these services reach the consumer (in most cases through digital platforms), each of them in a different way different, but, abstracting, managing to bring to the surface the evidence of stagnation, of sufficiency, and proposing a logical alternative but through unique, emotional approaches most of the time, they managed to impose themselves on local or global markets and implicitly pushed society to progress in leaps considerably higher than in conservative financial forecasts. In addition to the innovative financial services, the central banks have an essential role, namely the prudence and the management of the financial risks at national, European and international level.
The latest platform launched in Romania for digital financial services is the FinTech Innovation Hub of the National Bank of Romania (www.bnro.ro/FinTech-Innovation-Hub-20272.aspx), which according to the press release dated 23.09.2019 ”will be focusing on encouraging and supporting innovations in the field of payments and payment instruments, in a controlled manner and to the benefit of consumers and businesses, while at the same time identifying the potential risks involved and proposing measures to manage them ”.
Artificial intelligence in the financial field plays a decisive role in initiating and developing innovations in the field of financial and payment services, as well as overseeing financial transactions globally, making consumers' access to financial services more flexible, but especially in identifying potential risks in time, as well as limiting them through management measures.

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