

DIGITALIZATION WITHIN THE BANKING SYSTEM AS A CONTINUOUS CHALLENGE

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Abstract

While living in the modern era, the technological innovation happens so fast that affects daily producing changes in human habits, trend of activities and working trends. On the other hand, it is a great challenge for the companies to be up to date and putting in place the new emerged business solutions. Competitiveness on the market has never been more tight resulting in bringing new products, constant improving customer experience, user friendly solutions, doing banking at any time, at any place, securely, precise, now. The regulations also must be aligned to the technological capabilities and customer demands in order for the banks to be able to develop and act in the benefit of clients, constantly adopting innovation.

Keywords: digitalization, digital banking, online banking, userfriendly, connectivity

JEL Classification: G20, G21, O32, O33

1. Digitalization overview

As defined in the Gartner IT Glosar, digitalization refers to using the digital technologies in order to change/transform a business model into acquiring new income sources along with new ways to produce a added value. Thus with **digitalization** we act on a process in wich we let aside the classical methods that suppose direct human interaction to use inovative technologies while doing our daily routine. To put it another way digitalization means to use technical compatible tools in order to raise and add value to our work. The added value consists in high definition eficiency, accuracy, consolidated data, efectivly coordonated reporting as per individuals or company.

Digitization is the first step of towards data transformation into new technical solutions as we use it today creating the contemporary technologies. So, we take the phisical data and we store it on a memory platform (phisical platforms, fixed or mobile platforms, virtual platforms).

Nowadays communication reached probably the highest point so far, considering the ways to data transmission, revealing and dissemination using different types of electronic devices having a **userfriendly interface** that in business we call it **data visualisation**, ruled by **connectivity**.

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Data visualisation may be translated in the way that business decisions are taken these days: strongly documented with detailed information and the need to act in the blink of an eye. That is why this huge amount of relevant data managed becomes irrelevant on a classical business report but strongly meaningful if it is presented on a chart analysis and complex diagrams because our human brain can process data much faster in such way and the business decision can reach its purpose in the most effective way.

Connectivity is about being active on internet, using multiple integrated technology devices and/or tools to conduct an end-to-end process (business or pleasure).

Digitalization is about fast and complete operations, with immediate results. So it means having access to highly accuracy data, in real time, securely and transparently between the initiator of request and the data holder in order to produce effects. This process from a banking point of view can be defined creating or recreating a business relationship or transaction processing.

Now, there are other factors that must be taken into consideration while addressing this topic:

- **Open banking** refers to using API technology to third party connections and data exchange, as for card payment, ATM cash withdrawal. This solution uses highly transparent data about the card holder and their account (such as public data to private data that is subject to GDPR regulation) together with open-source technology.
- **Digital banking** is a concept that describes the moving of banking processes from Front Office not to Back Office but to online processing solutions. This implies both transforming and adapting continuously from clients and banking institutions. Digital banking integrates a high level of automatic technologies into complex solutions in order for the end user to be able to operate its own accounts, settings and preferences independently, regardless of space and time or a moment in time, upon whenever or whatever needs. This is how it started the relationship between API and AI.
- **Online banking, internet banking or web banking**, can be described as integrated systems that convey to users (banks and other financial institutions and their clients) the possibility to make various transactions using a dedicated website or a mobile platform. The first solution of this type was issued in USA in the year of 1981. At that moment there were using the dial-up on analog exchange connection to service. Our nowadays solutions use STP/FTP wires, wireless or digital exchange connectivity, depending on the device used to realize the operation. While using an online banking solution the system works mirroring core data and subsidiary bank data (upon the real place that generated the business relationship).

2. Digitization to digitalization in. The banking system

The banking system evolved along with humans that were experiencing the exchange of different goods or coins, the need to save-up, financing or warranting.

The banking phenomena that we describe it today as loans, deposits, returns and payments, payment instruments, debtors or creditors were mentioned on various

inscription from the ancient times. The human kind had all along a constant preoccupation to preserve written/inscribed evidence of goods and money exchange, since forever. This helped us in the process of acquiring knowledge, organising and human evolution.

Worldwide, the banking system developed randomly, functioning at asymmetrical levels through the past era. Nowadays it became obvious that in a decentralised system the regulations apply differently thus favorising one country before another.

Following the 1929 economic crisis the next turning point was the WWII that led to the economic global reconstruction. After the Big War there was a massive recession this meaning that for each state in the world would have been impossible, in a short while, to reconstruct and sustainably develop on its own but with highly potential to produce results if allied together. Thus have been created specific international organisations for economical and financial cooperation that generated some set rules, promulgated widely. The rules were about coordination, monitor, supervise, funds regulation for the member states governments.

From the technological point of view another wide open road begun in the early '60 with the reading and rendering of information which led to inventing the ATMs (*Automated Teller Machines or Cash machines*). In the year of 1967 was sent the 1st electronic bank notification to a client and 6 years later, in 1973 it was decided that SWIFT payment codes must be used worldwide.

3. Digital transformation of the banking system

The need of banking technology development generated the prioritization of funds allocation along with an accentuated banking institutions drive to get involved in the IT industry. The most peculiar requirements refer to operativity, safety, simplicity, risk minimisation, banking flows streamlining management, access data facilities, the prospect to processing and analysing data from different sources simultaneously in order to generate on spot business solutions.

Digital transformation is a continuous process of development which shows within the cultural transformation of mentalities and old patterns applying innovative methods at every level of not only interacting but also into interpersonal communication. This will be found new solutions, new ways to solve the clients demands yet their enforcement are leading to changing.

In this whole process knowledge has the greatest highlight because while referring to the market we must perceive the trends in likes, dislikes and how to use this information to identify new means to transform the collected data into a valuable product by quantity but mostly by quality of it. The attention should be settled towards digital customer experience; the shortcomings shall be assumed and transformed yet the well founded parts shall be explored into driven successfully apps. Knowledge means education, erudition, self-transcendence through learning and continuous adaptation of the human kind to uphold the process of sustainable development at all levels.

We have started from information and digitalizing the information, from taking the physical data and storing it on electronic devices (FLOPPY, CD, DVD, HDD) to arrive at using WEB BASED solutions and mobile-APPS or other dedicated technologies to solve various working or recreative tasks, paywalls, podcasts, VR.

The condition to make this transformation successfully is to put in constantly the

effort into changing and implementing those new concepts, coordinated and at every each business level by:

- being digitally active which should lead to optimizing and constant improving also reflected in the returns;
- assumed engaging in the digitalization process with the competitiveness that comes in as a default criteria. This means to use modern business solutions to work and envision future trends so that the present not so good stuff can be revised;
- digital maturity, meaning adopting and using AI to be efficient.

4. INTERNET of things FOR banking



The figure above illustrates what connectivity and information access is about. All these processes are happening in real time, accordingly to each one's needs regardless if we talk about a person or corporate entity. With the nowadays technology you can make payments, currency exchange, see documents associated to a specific transaction, bank deposits, loans and so on with just one click for each regardless of location and/or time. The means to achieve transactions this way are publicly detailed, easy to access and to operate, using any electronic device with active internet connectivity, such as a tablet, PC/laptop, smartphone.

Connectivity and banking information access is a merged concept between technology and regulations that are working in symbiosis, one without each other being completely useless. This technology developed gradually in the last 15 years, but mostly in the last 3 years. Accordingly to RAB (Romanian Association of Banks) the technology development in banking within the project *Digital Platform Agenda* in 2016 stipulated *"The European Banking Federation, an organization in which the Romanian Association of Banks is a member, supports the European Commission's plans regarding the establishing of a single digital market, an objective which can be reached by developing in the financial and banking industry some innovative and competitive services which would fully meet the requirements of the consumers of financial and banking services."*

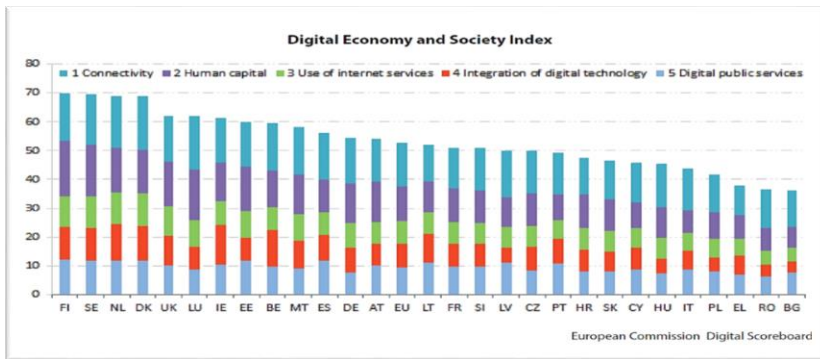
RAB also provides the statistical data for an overview of how Europeans use the banking services nowadays, as I quote (www.arb.ro/digital-agenda-platform):

- the usage rate of bank products and services at global level reached 69% in 2017, compared to 51% in 2011;
- 94% cash transactions in Romania compared to 68% in Western EU;

- 8% the rate of the SMEs which sell online in Romania compared to 17% in the EU;
- the "grey" market 5% down via the increasing of electronic payments by at least 10% per annum, for 4 years in a row;
- 52% of adults made electronic payments at global level in 2017 compared to 42% in 2014;
- in 2018 in Romania 26% of internet users shopped online compared to 69% the EU average and 10% of internet users used internet banking compared to 64% the EU average.

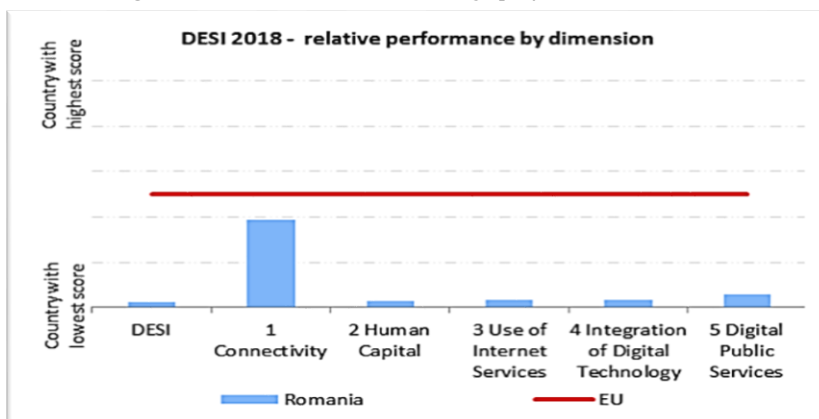
As we can see, in the statistic presented below, Romania holds the last but one place on daily usage technologies, before 2020.

Figure 2: Digital Economy 2018



The 2018 DESI (*The Digital Economy and Society Index*) report shows that in terms of connectivity Romania ranks below the average yet this being the best result on a technology using indicator. On a decreasing level of reporting follows digital public services, human capital, use of internet services and integration of digital technologies.

Figure 3: Romania and the UE average performance rate 2018



On the same DESI indicators for 2020, Romania is one step higher in the hierarchy:

Figure 4: Digital Economy 2020

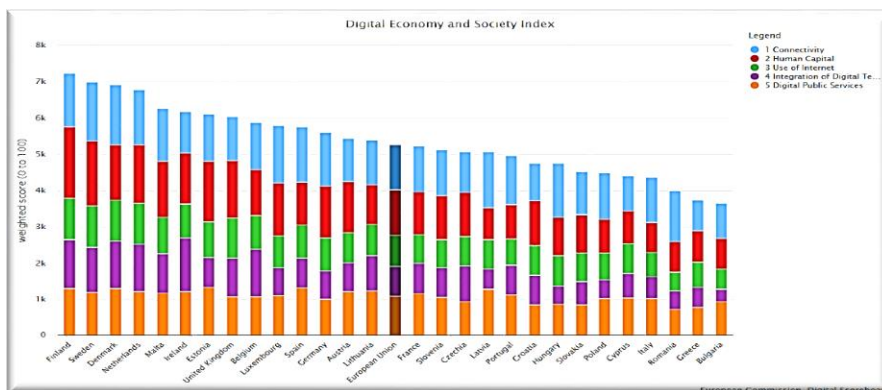
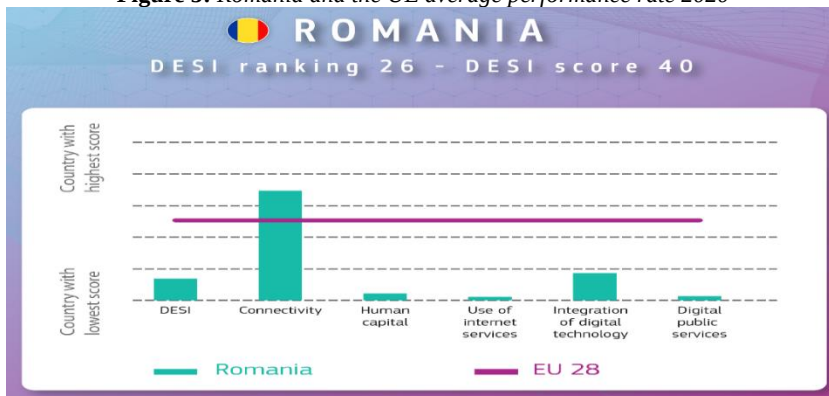
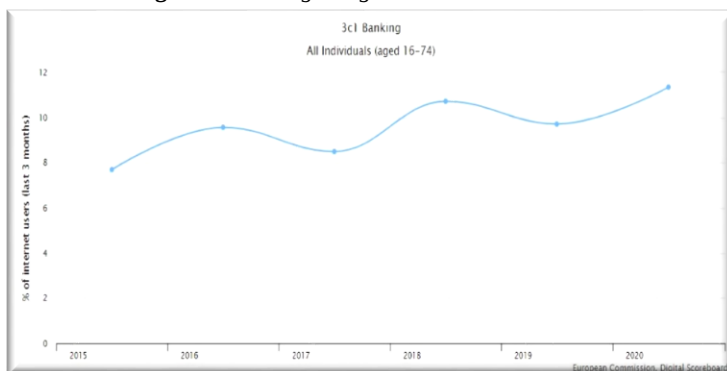


Figure 5: Romania and the UE average performance rate 2020



After seeing the standard indicators improving and that connectivity in Romania is above the European average let's see what happens in the banking field.

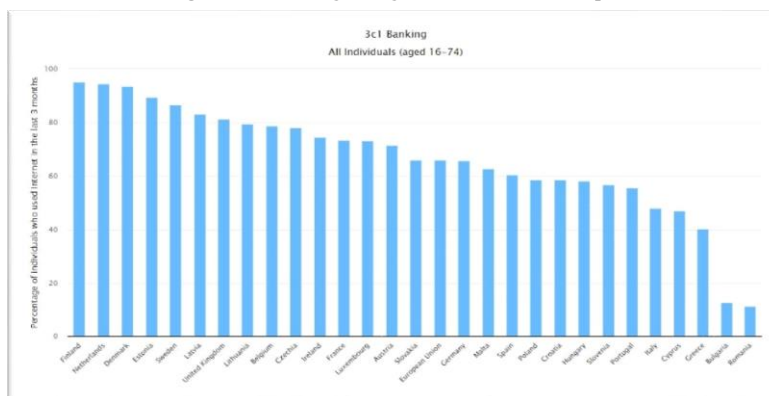
Figure 6: Banking using the internet in Romania



Romania has an increasing trend in using internet to access banking products, though the graph does not show a steady rise of this indicator the overall progress is obvious and improving.

Now if we are to replicate this indicator over Europe, Romania has, by far, a lot of progress to make in banking field, since we are on the last pace in the Figure 7.

Figure 7: Banking using the internet in Europe



The banking and its employees in the digital era magazine in 2018 mentions the trends of the digital transformation in global banking anticipating also some guidance for the autochthonous market, such as:

- eGovernment, Interoperability, Cyber-Security, Cloud Computing, Open Data, Big Data and Social Media.
- IT&C within Education, Health, Culture and eInclusion.
- eCommerce, Research & Development and IT&C Innovation.
- Broadband and Digital Services Infrastructure.

Regarding the foreshadowed trends at that time, the first way to achieve these goals is lifelong learning. Then there is the need for an efficient combination between the workforce involved and the developments in the IT area, using continuous adaptation to the transformations that will take place.

Romania's National Strategy on the Digital Agenda provided for a significant development of the digital sphere since the beginning of 2014 so as to produce the effect of maximizing cost efficiency by increasing the capacity and degree of specialization of jobs qualitatively reflected in the 13% increase in GDP.

If we are to refer strictly to the workforce, digitization directly involves the development of specific activities with dedicated resources, which have a highly degree of specialization in order to ensure the continuous operational flow that is necessary for a solid process within the sustainable development. Skilled labor is indeed more expensive for any business organization, but given that the number of jobs in the departments engaged in an active digitization process is falling significantly, this translates, without a doubt, into a reduction of administrative costs.

Analyzing quarterly, the effects of digitalization in terms of time, we may see that the change is more than obvious in general, both in public administration and in the real economy yet much more pronounced in the banking system.

5. Banking trends of 2020

1. Intelligent banking:

- adoption of block-chain technology to streamline cross-selling;
- making real-time payments, bringing relevance to cash-liquidity management;
- using as many cloud solutions as possible in order to increase the operational efficiency, process control and measurement;
- the existence of virtual accounts which can help corporations to efficiently manage transactions.

2. In-depth knowledge of customers using AI for AML compliance.

3. Data compliance using emerging technologies to reach a higher cyber security level.

4. Open Bank:

- Opening portals as an banking integrated parts;
- Collaboration of banks using fintech technologies in order to provide much better services for small and medium-sized companies.

Fintech is a term that has been circulating strongly in recent years, being an acronym for Financial technology, referring to a modern technology in the financial field, which helps finding innovative solutions to processes improvement. Fintech technologies include the use of smartphones, mobile banking, investment solutions and loans, addressing all types of customers: companies and retail industry. Among the integrated fintech technologies it is to mention the following: API, AI, Big Data, Blockchain, RPA, CS.

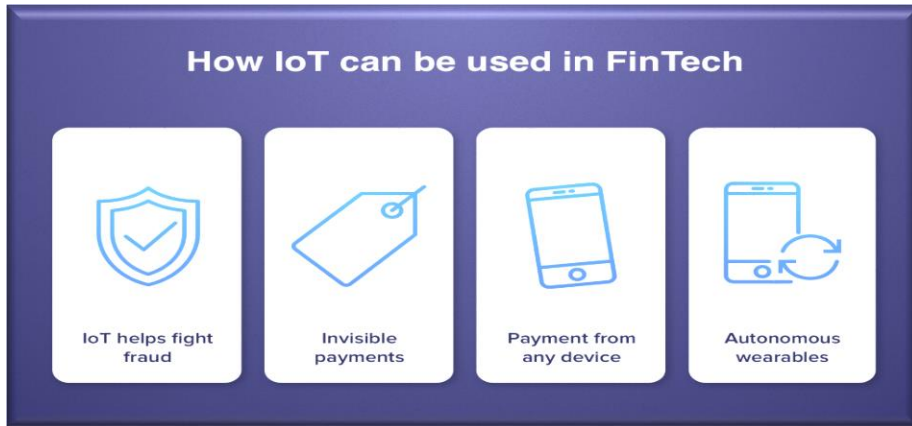
Summarising these findings the drawn the Fintech trends for 2020 at the end of 2019, bearing in mind that there were emerging projects setted to start before the Pandemic Era – Covid:

- banking as exclusively Online-banking;
- blockchain technology to transform the financial world;
- AI and its application as natural for the financial sector;
- stricter regulation on fintech technologies;
- innovation in the payments segment;
- transforming competitors into collaborators merging in the fulfillment of those common objectives;
- spreading technology for the easy usage of everyone;
- fintech expansion;
- Smart contracts are successful through teamwork.

Analysing the Feintech possible digital solutions developed on the premises of Information and communications technology - ICT and Internet of things - IoT, we can discover the four fundamental directions of development:

- anti-fraud prevention and used-in-process electronic devices security;
- invisible payments, which in fact represent the descendants of Direct Debit payments (such as payment for Uber taxi services);
- payments using any type of instant electronic device (replacing cash payment);
- using any type of instant electronic device for payment of any type of purchase.

Figure 8: *IoT and Fintech for Digital Development*



6. Benefits, risks, challenges and opportunities

Digitization in the banking system and ofcourse, the digital transformation, operate for the benefit of people and the economy since it offers rapidly, almost instantaneous, access to information, enabling a customer to find quick solutions to the existing matter or need at a given time. to products and services can be made directly, securely and strictly confidential, so that any customer can make real time valuable choices.

At this moment it is necessary to change traditional mentalities, but without giving up the traditional values. The mentality changes in this context means competitiveness in the market, increased efficiency reflected both in sales and in the possibilities of generating added value compared to the cost of the available banking products or services. Operational flows, regardless of the department, become flexible pursuing the same traditional goals but solved by new means. Adaptability is the immediate effect of flexibility on applying method, both in the short and long term, this being a basic need in order to be always present at the top of the banking market.

The innovative business necessarily involves a continuous investment plan in technology of processes and security technology. As long as an upward trend in investment is maintained, the benefits will show up quickly, even if the investment in technology is made with significant costs, the effects obtained being precisely reflected within indicators of analysis used for the financial result, through a real increase.

The quintessence of successfully digital banking transformation is the financial education and continuous adaptation, both inside and outside the banking institution, in order to be able to assimilate the changes that occur from one day to another naturally, without too much effort.

Risks are perhaps the most important chapter in doing banking, but all the more important as the technology is developing at a very fast pace, that suggestively may be called *fin-it-warp*. It is obvious that any digitized operation will be subject to the legislation and working regulations governing that respective banking activity. The new risk component in this case becomes accentuated from the outside to the inside and depends on the honesty of the user of digital technologies, the secure connections used and the data flows.

The opportunities opened by the digitization in the banking system are extremely vast and necessary, at least in terms of data accuracy, compliance with the deadlines for the completion of subprocesses such as cut off time for data transfer operations. funds. In terms of computer systems used and applications, there are regulations in place based on the principle of segregation of duties, which resulted in working with intermediate databases on a daily basis. Only at the end of a banking day the intermediate data will be transposed within the big database, after these intermediate processes and procedures have been rigorously verified. In this sense, a code of good banking practice is represented by the four-eyed principle, which involves the cross-checking of daily interim reports.

Thinking about how benefits, risks, challenges and opportunities of digitization in the banking system would look like in a SWOT analysis, here are the following directions, as perceived in the current context:

Figure 9: SWOT for Digital Banking

STRENGTHS	WEAKNESSES
• accuracy; • quickness; • transparency; • simplicity; • cross-sale; • customer experience; • added value; • market share.	• strategical risks; • security risks; • constant investment; • short-term costs = long-term efficiency.
• innovation; • sustainability.	• cybersecurity; • limitation by regulations.
OPPORTUNITIES	RISKS

The weaknesses category of or, rather, sensitive tabs, is included the strategic risk because it has a series of components, which can significantly influence the banking activity:

- The chosen strategic trend. Because both the short-term and also the long-term business strategy, must constantly relate to the consumers needs. This meaning that an extraordinarily reliable product could be brought to the market, but the market shall not be educated or prepared to receive it for use, which would result more as harm than good.
- Investment risk, in which the market trend and customer experience weight the greatest into the forecast analyzes for the decision-makers. This aspect is closely

related to the continued investment need, being directly reflected in the short-term cost-effectiveness and long-term benefits.

- Security risk has a similar meaning to strategic risk because we can refer to:
 - Securing information in the permanent data flow, to customers interface;
 - Securing the storage data bases of the flows.

Cyber security is a field that is constantly evolving both as a basic IT requirement and as a necessity of digital processes. It falls into the category of potential risks due to the fact that a high-performance operating system must have a cyber security system as advanced as possible, especially in the banking field.

The obvious benefits or strengths of the digitization process in the banking system are defined as follows:

- Data accuracy, a self-explanatory indicator.
- Duration of a process in matter of time. One should look at this aspect from both points of view: customer - banking institution.
- Transparency refers to the fact of communicating the information from the owner, to its user, completely, with all the afferent details, so that the latter can make the choice that best suits his needs.
- Simplicity is the most obvious impact factor for the end user, referring to the intuitively degree of the interface belonging to the application or site operatating with, from a financial-banking point of view.
- Cross-sale is a common benefit to both banks and users, generated by the information presence and circulation in the online environment. The more information there is, the better the user of digital applications can make effective choices. The more beneficial the choices are to the user, the more efficient is the business of banking institutions, being reflected both in sales and in the financial result.
- Operational efficiency is a parameter that includes a part of each element stated above.
- Plus value and the market share is also the effect of efficient digitization of a banking institution.

7. Conclusions

Investing in the digital development is a factor of the greatest importance in the present times. If investments in innovative technology have not been included in the long-term strategic business plan so far, 2020 is probably the last train to the sustainable development of any business.

What does digitalization brings? First of all, it brings the presence in the online environment reflected in the offline environment, in real time. So digitalization rewards us with a better representation in the market, offering at the same time the direct opportunity for each banking institution to present itself with the newest and / or best banking products and services, together with the related services. Competitiveness on the banking market thus moves to a higher level, generating a reaction of real qualitative and quantitative selection of products and services offered by customers. This choice is due to the transparency of the information existing in the market, publicly, being facilitated by digitization.

Where can we apply it? Wherever human input can be replaced by machine, to be more specific, by AI (artificial intelligence) combined with other tools, in order to be as efficient as possible for both B2B & B2C.

On a short term, the boom of benefits generated by digitalization can lead to unconsolidated investments that can disrupt business activity in general, so the need for a long-term structural strategy is all the more important to be defined, budgeted and pursued to achieve the expected results. On the other hand, the nature of technological innovation, happening so rapidly, *fin-it-warp*, could generate significant investments in uncontrolled technology, without following the possibly side effects, generated per the long term such as human interaction and humanity. All this because it could reach a higher technological level of *fin-it-warp II* type, very well coordinated and implemented from the point of view of business and cyber security, but which would irreparably affect humanity, as we understand it today.

It is very likely that currently there is some working on business projects that integrate human cognitive processes with AI, such as consumer mindfocus, in order to generate or be able to bring to each consumer a series of artificially generated needs and necessities, without a basis of natural values, causing irreparable changes in the self. From a strictly business point of view, such an approach to technological innovation would lead to consumer loyalty for the generation of constant and permanent consumption, generating profit maximization. In this case the question might be asked: *Heading tohwards what?* We may never receive the answer, or we may not even realize it when the change has already taken place.

A defining aspect of technological innovation in banking is financial education because it is the most valuable foundation of decisions made consciously by each individual at a given time.

Thus, the digitalization in the banking system has been ascending on the *fin-it-warp* trend, being forecasted and documented since the beginning of the last decade. But the 2020 pandemic has accelerated digital business processes.

If we are to analyze the change in working comparing 2019 to 2020 we can findout some major differences:

THEN >> walk to the bank to	NOW >> digital solutions
• renegotiate due date rate payment;	▪ fill in an online form signed using namirial;
• pick up a renewed debit/credit card;	▪ the debit/credit card comes by courier regardless if we acquire a new one or it is the renews one;
• to have a small talk with a bank representative in order to find out new products, trends or better possibilities.	▪ front office personnel works at half capacity and with maximum cautions keeping that minimum needed distance from the client yet all the information and the means to data processing are available.

Table 1: Comparison between 2019-2020 on banking activities

Would it be possible to digitalize the banking system so efficiently that the activity would be carried out with highly qualified, reduced staff, which would only verify certain stages of the digital processes from an operational-legislative and cyber security point of view? This also involves limiting the number of territorial units to a strategic minimum. YES.

Would this transformation benefit all business levels? YES.

On what historical data can we base such a decision? Currently in Romania there are universal banks that operate exclusively online, Libra Internet Bank but also banks that have brought innovation in the banking system in recent years combining innovative technology and digitalization, with the traditional way of working, but without working with cash in the front office, ING Bank. Also in the sphere of universal banks, there are institutions that successfully operate combining within the customer-oriented experience digitalization with the front office practices, Banca Transilvania.

The complexity of such a decision has a major impact on both customers and banking staff. Thus, we bring to attention the following situation: let's say that the banking units end up in the situation where the electricity supplier no longer provides electricity, in short a power outage. In this situation, the operational banking staff could manage certain urgent operations, according to certain pre-established working protocols / procedures. However, if we refer exclusively to the digital plan, the effect would extend even to the impossibility to operate any kind of transactions. In conclusion, an approach to digitalization at a high, but not absolute, level, keeping the workforce active at key points is the most real and beneficial decision no matter which side of the barricade we are on when analyzing this situation.

The banking solution facilitator is based on digitalization. Otherwise, banking institutions would not have been able to provide services during the state of emergency and would probably have been temporarily closed or worse, as we have seen in the case of many economic entities from March 2020 until now. We therefore have a strong basis to support the economic restart, a need that is pressing more and more strongly in the conditions in which the artificial-pandemic selection of corporations is still taking place.

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