Fintech as the accelerator of the future of banking systems

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Abstract: Fin-tech are accelerators of innovation in the banking system. They can improve efficiency, create new products and services, enable new business models, and blur the boundaries between industries. Digitization offers new opportunities for banks to put the customer at the center of the development process. New technologies remain and survive in the market to disrupt the value chain of retail financial services, as well as to introduce new players into the competitive arena. But a large number of banks stand far from the necessary scale of modern technologies. Banks need to be ready to meet any change challenge, which will require processes, skills, new products and an approach to meeting customer needs. The research subject of this paper is the urgent need for digitalization of the banking sector, continuous investments in modern Fin-tech tools. We believe that through this research we will show that an investment in the function of digitalization, traditional banking institutions will be ready to respond to any challenge of time changes. Nevertheless, banks must remain true to their basic identity as financial intermediaries: matching demand with capital supply.
Keywords: Fintech, Banking, digitalization, digital transformation

I. INTRODUCTION

The rapid development of Fin-tech in the late 20th and early 21st centuries has significantly impacted our lives and the entire world economy. In order for companies to continue to grow and retain their customers, they must constantly adapt to changes in the market. The growing market dynamics, the changing roles of different players and the constant new needs of customers create the need for companies to regularly change their business model. One of the major changes in business models in the 21st century is the digital transformation, without which a large number of enterprises would lose competition in the market. The term digital transformation is rapidly gaining in use and attracting high interest from the public and the media, and is often used without understanding the term. One of the sectors that is considered to be most affected by digital transformation is banking. Bank customers want quality services that are always available to them through one of the many channels. The banking sector is very competitive and in addition to traditional institutions, new market players are emerging, companies, the whole business model of which is based on digital banking services. Such companies, which often do not even have a physical branch, have a high impact on the entire sector, and above all on the need for digital transformation and improvement of digital services. Modern banking customers are one of the factors that most influence the digital transformation of banks. These modern clients, members of Generation Y and Generation Z, are clients who spend much of their lives in digital and find it difficult to imagine a world without it. This is why it is important for banks to know them well and understand their behavior and habits. Banks need to understand how they are different from other generations, but also from each other, in order to be able to recognize their needs and qualitatively regulate the digital offer. The aim of this thesis is to explore and understand digital transformation, the factors that are key to it and its importance and impact on the environment. Work will be done to understand the digital transformation in the context of the banking industry and the emergence of new companies with a fully digital business model. Moreover, the aim is to understand how these two generations work, their attitudes and perceptions regarding digital banking.

II. SOURCES AND METHODS OF DATA COLLECTION

In the first, theoretical part of the paper, we used journals, professional papers, books and electronic databases. In the second part of the paper, primary data obtained through a survey in the form of a closed online questionnaire conducted on a random sample of respondents were used. The methods used in this paper are inductive and deductive methods, analysis method and description method. Finally, a synthesis method will be used to be able to draw a conclusion based on all the data collected.

The new economy is a set of different measures, methods and techniques that have changed the basic way of functioning and the rules of the economy. The term new economy refers to new products, services, markets and rapidly growing sectors of the economy, mainly those based on e-business and internet technologies. [1] While in the traditional economy business models have consistently followed the usual stages of the business process and have rarely supported changing market conditions, in the new economy such concepts are unstable. The fundamental step leading to a new economy and digital business transformation was the proliferation of the Internet and

the World Wide Web [2]. These technologies have revolutionized communication within companies, between them and partners, suppliers and customers, but most importantly, communication for end users. With the understanding that internet technologies can be used to provide business services and conduct business transactions, the internet is becoming a new global economic space. Such a new role for the internet is becoming the basis and condition for much of the change that is taking place in companies in the 21st century [3]. One of the key indicators of the popularity of a particular term is how much the term has been searched in Google search,
Figure 1 shows how the term digital transformation has become increasingly sought after in recent years.

Source[4]:Google Trends graph for Digital Transformation

Although digital transformation is currently very popular, the ideas of digital products, services and media were already clear and accepted in the 1990s. The retail sector can be taken as an example: mass media campaigns were considered as important digital channels for reached customers, although expenditures were made within physical points with physical money. [5] The popularity of the term digital transformation In the 21st century, the application of information technology and information systems in business is evolving - from serving as a technology partner to business, to using today as a tool to innovate business model and becoming a factor key to successful business management. New digital business models are emerging, which include business activities that take place electronically and with the help of digital technologies, and they create added value by connecting with the environment [6]. Such a business allows companies to offer customers products and services continuously, 24 hours a day, seven days a week, and those who offer it in the best way will have the best chance of success.

In other words, for the application of the electronics business, the company is able to do business in the field of physics [7]. It is important to have the flexibility, flexibility, and the best curiosity and professionalism. The company is looking for a way to find the right products and business models. They need to anticipate future market needs in order to be able to deliver the right products at the right time [8]. They are increasingly researching and introducing new digital technologies. In the future, we will be able to focus on the success of the technology industry, and invest in the development of the parasite in the development and transformation of digital [9].

Digital transformation is closely linked to the need for organizations to use new technologies to stay competitive in the internet age, in which services and products are offered both online and offline [10]. According to [11], digital business transformation is the intensive application of digital resources and technology in order to create new sources of income, new business models and ways of doing business. On the other hand, digital transformation is often perceived as a cultural change that needs to happen within an organization, but the literature so far has not provided much knowledge on how to manage this internal change. There is currently no generally accepted definition of digital transformation, but there are a number of different definitions that can be categorized into three different elements: (a) technological, which emphasizes the importance of using new technologies,

(b) organizational, which emphasizes the importance of changing organizational processes or creating a new business model and

(c) social, which emphasizes the impact on all aspects of human life, such as improving the user experience[12]. Many people, but also organizations, equate digital transformation with information technology within the company, but it is clear that it is much more, and that its strategy is meaningful to all stakeholders. "The digital transformation strategy is a key factor of change – it ensures the compatibility of processes, current IT solutions and future development plans. Properly set and defined digital strategy guides investment decisions, provides business context and creates confidence in the company's success in the digital future of the market.

Digital transformation strategies overlap to a large extent with different strategies within the company. Digital transformation strategies need to be consistent with other functional and operational strategies and it is important for management to monitor the digital transformation harmony with the company's business [13]. According to Rogers [14], digital technologies form 5 areas of strategy:

1. *Customers* - the relationship with customers becomes two-way, and customer reviews and communication and their dynamic participation become a key factor for the success of the organization. 2. *Competition* - companies are increasingly competing with other companies that have not traditionally been competitive with them, but are getting customers through digital channels. There is cooperation between companies in one sector, while in another there is strong competition.

3. *Data* - In traditional business models, it was difficult to access and maintain expensive. Today, companies have large amounts of data that are much easier to use.

4. *Innovation* - enables continuous testing and experimentation that was not possible before. Companies improve and replicate the product before and after marketing.

5. *Value Delivery* - Frequent changes in customer preferences and increasing competitive bidding constantly force companies to evolve and improve the way value added is created.

III. KEY FACTORS AND CHALLENGES OF DIGITAL TRANSFORMATION

After defining digital transformation and understanding how important digital transformation is to business, it is necessary to know why some companies succeed in digital transformation and some do not. What are the key factors necessary for success and what are usually the biggest challenges and obstacles, it is important to know before creating a digital transformation strategy, and necessarily during implementation.

As with any other transformation, one of the key factors in digital transformation is people. The most important role people play in the roles that lead the transformation and leadership of the enterprise - the more actively involved in the digital transformation, the greater the chances of success. Digital transformation requires a clear vision of what exactly to implement, but also strong leadership to implement it [15].

Strong companies recognize this and heavily employ people who have experience with digital business models and digital transformation, as shown in Table 1.

Table 1: Hiring digital professionals from large companies

Company	Employee with digital experience within the company's management:	Prominent employee experience:
Walmart	Kevin Systrom	Instagram
Walt Disney	Jack Dorsey	Twitter, Square
Sainsbury's	Matt Brittin	Google
Deutsche Telekom	Lars Hinrichs	XING, HackFwd
Sony	Joi Ito	Digital Garage, Technokrati, Inforseek

Source: World Economic Forum (2016.)

The head of the organizational unit responsible for IT management in the company is the Chief Information Officer (CIO, Chief Information Officer), who often becomes the most important person for business change and digital transformation [16]. In order for a CIO to become a digital business leader, it must make three types of changes :

1. Technological leadership - from focusing on old systems to new digital technologies.
2. Leading in new business values - from IT performance metrics to creating platforms that allow you to cope with change.
3. Leading people, teams, organizations - from "command and control" focus within the IT department or sector on creating visions of the future business model.

While people in key positions for transformation are paramount, the rest of the workforce should not be neglected. Companies that implement a successful transformation invest more in the entire workforce. The chances of digital transformation success increase more than three times if an organization invests enough in a powerful digital workforce, but for digital transformation to be successful, in the end it is not enough to have a strong workforce, but for adapt the roles and responsibilities of individuals [17].

III-1 Technology

The way a company uses technology shows its attitudes and ambitions towards technology and the opportunities to benefit from new technology. It is necessary for every company to position its attitude towards technology and determine how it wants to use it [18]. Organizations have the option of choosing between different modern technologies, depending on the areas they are transforming. They are not successful in implementing all the technologies where there is no need for it, but it is enough for them to implement the technology where it will have the greatest impact on the company's business . The diversity of each company and its processes mean that they need different technologies. According to the consulting company[19], there are also technological changes that are important for any transformation:

1. Introduction of digital tools that will increase the availability of various information throughout the company.
2. Implementation of technology that enables self-service of employees and / or business partners.
3. Use of interactive tools and decision-making based on data.

III-2 Organization

The unit in charge of digital transformation cannot operate on its own, just as a digital project cannot operate separately from the rest of the company. Therefore, digital transformation requires the involvement of people from other departments. Since it often affects the entire organization, coping with the changes that come with this process is not easy for many employees [20] As with any change, clear communication is a critical aspect during digital transformation. Enterprise management should help employees understand where the organization is heading, why it is changing, and why change is important.

III-3 The main challenges of digital transformation

Despite the fact that technology is evolving faster and that many ways to implement this technology have been shown in the literature, the digital transformation in the company takes much longer and faces far more trouble than expected. Many companies have not successfully followed the constant changes, which in a large number of cases were caused by the inability to adapt business models to digital business [21] lists the biggest challenges facing digital transformation leaders:

1. *Prioritization* – whether the company should increase the efficiency of current operations or whether the focus should remain on customers and meeting their needs. These two important tasks are not always compatible and improving one can lead to reducing the other.
2. *Data collection or personalization* – emphasizing the predictable behavior of a large number of clients often leads to ignoring clients' personal needs. Meeting needs often requires personalization, and emphasizing customer segments often leads to depersonalization.
3. *Investing more resources in IT staff or analytics software* – it is difficult to estimate the change in return on investment.
4. *Saving all the data or storing the data for a specific purpose* – because data storage costs money, they are both an opportunity and a problem. Data that cannot be used is useless. It is not easy to understand which data are useful for analysis and which are not.
5. *Performing tasks from human labor or automation* (and to what extent)
6. *Data security or availability* – companies need to balance the importance of data and the sensitivity of data availability.
7. *Individual privacy or understanding of individuals* – as mentioned earlier, companies mainly collect data about users in order to better understand them and better meet their needs. In order for users to understand, they may not respect their privacy.

III-4 How it affects digital transformation

Measuring the digital economy and its added value is fraught with difficulty. As a first factor, it is important to note that there is no generally accepted definition of digital economy. As another factor, measurements of key components and dimensions are often incomplete, especially in developing countries. Depending on the definition, estimates show that the share of the digital economy is between 4.5 and 15.5 percent of world GDP (UN, 2019). Measuring digital transformation faces similar problems. As mentioned earlier, there are a large number of definitions that present it differently and a small number of defined measurements by which it can be measured. In addition, it should be noted that the digital transformation in each organization looks different and therefore has a different impact.

The global digital transformation market is expected to grow at a growth rate of 22.5% between 2020 and 2027 and reach nearly $ 1.4 trillion in 2027 [22] The importance of digital transformation is also recognized by multinational corporations, which have already performed mainly digital transformation. Some examples of digital transformation and changing business models of multinational enterprises are presented in Figure 2.

Figure 2: Digital transformation of multinational enterprises

From Old Business Models	To New Business Models
Near bankruptcy in 2004, LEGO underwent a restructuring, reducing dhe number of divisions they haad and outsourcing unprofitable ones such as LEGO computer games	LEGO's design capabilities are increasingly being handed over to its fans, e.g.. Lego Digital Designer. LEGO has set up new digital businesses. Lego Mindstorms, video games
Axel Springer struggled with its declining print bisiness and in the early 2000s. Its shift toward digital was perceived as chaotic	Revenues from digital business surpassed print 2012 and today accounts for more than 50% of revenues. Core business models adopted are paid models, marketing models and classifieds
Microsoft's main sources earnings. PC royalties and licensing were increasingly being challenged due to a shift toward mobile technology	Microsoft adopted new advertising and subscription based models, with an increasing focus on mobile devices, in the process cannibalizing its existing businessmodels
Autodesk, a leader in software solutions for 3D design and engineering, had a perpetual licensing model, that was faced with diminishing profits due to increasing digitalization	In 2013, Autodesk made a shift towar recurring a subscription model. This move was widely appreciated by analysts, who projected an increase in operating margins from 13% to 30%
HBO's subscription based model was increasingly being challenged by new online content distribution models	HBO, to counter the challenge from digital natives, created its own distribution platforms HBO Go and HBO Now and licensed media to Amayon Prime and other streaming platforms

In the early 1990s, IBM's mainframe business hit the wall and Unix and X86 systems took the datacenter by storm, which led IBM to fire more than 150,000 employees	IBM's transitioned from being a hardware seller to a technology and consulting services business, increasing both its operating margins and valuation

Source: World Economic Forum White Paper Digital Transformation of Industries: In collaboration with Accenture, Digital Enterprise January 2016, p. 10

Multinational companies are aware that the effects of digital transformation are positive for them from a business perspective. On the other hand, the issue of social influence is raised, which becomes the subject of many debates among politicians, economists and many others. The presence and growing influence in society raises the question of how it affects various factors such as jobs, wages, inequality, health, security and resource efficiency [23]. According to the WEF report (2020), in order for the impact on society to be positive, it must focus on three areas:

1. *Employment and skills* - while previous technological revolutions have lasted relatively long, the speed of digital transformation is significantly higher and therefore companies need to adapt faster. Although some industries will create jobs and some will lose jobs due to the impact of digital transformation, the first conclusion is that companies need to successfully educate employees in order to adapt to the digital age.
2. *Environmental sustainability* - digital initiatives can reduce net CO2 emissions by 26 billion tonnes between 2016 and 2025, which is almost equal to emissions across Europe at the time.
3. *Trust* - Trust in multi-digital organizations has declined due to concerns about privacy and data security. Creating new standards of ethical behavior with digital technologies and achieving the highest levels of customer trust is essential to successful digital transformations.

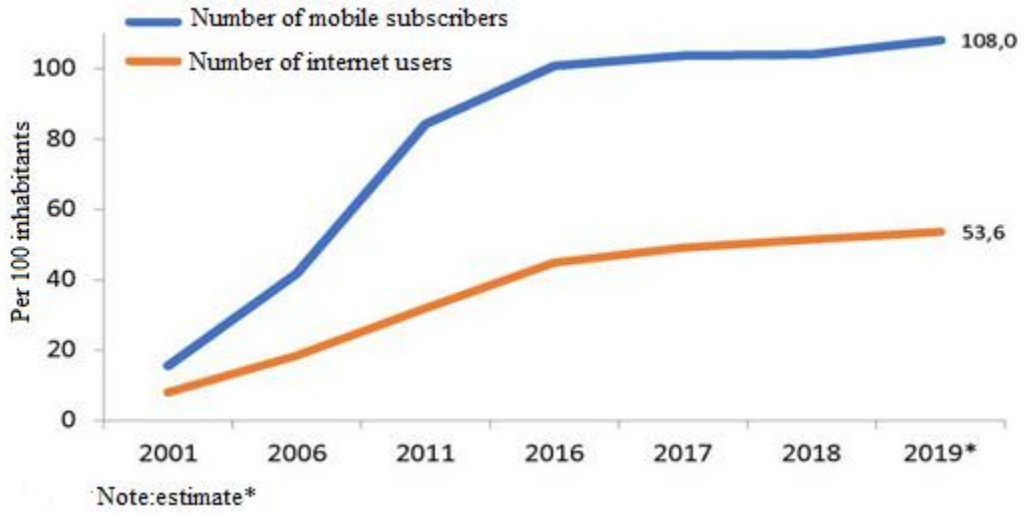
IV. **DIGITAL TRANSFORMATION IN THE BANK**

Digitalization in the bank can be defined as the use of digital technologies to simplify banking transactions and minimize operating costs. The ultimate goal is to improve customer satisfaction and enable financial institutions to profile potential customers for future needs. For banks, digitalization has become one of the strongest sources of profitability and market differentiation. In addition, it influences business transformation: reduces costs, increases quality, and helps develop new products [24] "In the bank, competition is one of the important determinants of the beginnings of this very difficult activity to determine in time. Probably in no other branch of the economy, except trade, the imperative of constantly facing and overcoming market competitors "The emergence of increasingly sophisticated information and communication technologies, especially the Internet, during the second half of the 20th century directly influenced the development of banking functionality"[25] Although all enterprises have to deal with accelerated changes in technology, consumer behavior and business processes, the effects are greater in the service industries and banks are at the epicenter of these changes. The reason why technological evolution has a much greater impact on the bank is simple: the main bases for doing business are information and money. With the development of technology, the possibility of dematerialization of money has been created - their transformation into data that can be stored, processed and transmitted immediately. Panian states that there are five stages in the development of banking functionality due to the impact of modern technology:

1. Initiative - the management of the company realizes that an opportunity is offered due to the development of the first information and communication technology. It has begun to be perceived as a key factor in improving market position.
2. Interaction - Providing offline banking services for online services, allowing customers to do some of the work themselves, interacting with the technology that the bank makes available.
3. Personalization - online services are becoming the predominant form between bank and customers. Moreover, they have started to offer personalized services to suit the needs, desires and preferences of each client.
4. Virtualization - ideas for creating virtual banks are being developed, i.e. Banks that do not exist in physical form. It presents a number of changes in banking operations, but also creates a large number of risks.
5. *Mobility* - The development of technology in the 21st century has enabled banks and financial organizations to provide mobile services that significantly save customers time and increase bank satisfaction.

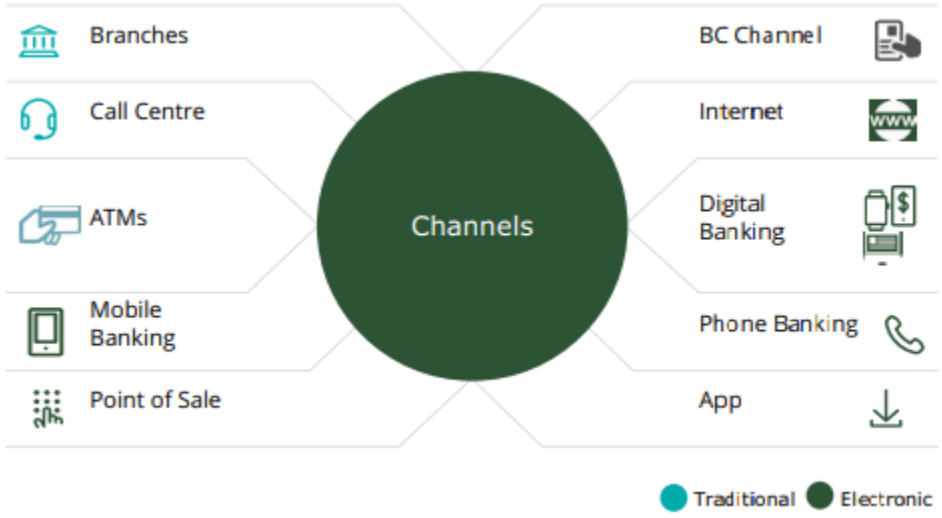
One factor that has had one of the biggest impacts on the digital transformation of banks is the penetration of the mobile devices market. Due to their wide distribution, today almost 4.5 billion people have access to the Internet and may have the desired information [26]. The extent to which the use of mobile phones and the Internet has become ubiquitous and has affected the lives of the whole world is further shown in Figure 3, which shows how the number of Internet and mobile subscribers has increased in the 21st century.

Figure 3: Number of internet and mobile users in the 21st century



Source: International Telecommunication Union

The use of the internet and mobile phones has significantly transformed the habits and preferences of users, who are increasingly interacting through digital media to share information about themselves, to purchase new services or products. They want the ability to open an account in minutes, expect banks to have all the necessary data, constant availability, intuitive user interfaces and personalized handling. Therefore, the main factors of differentiation in digital services often become the consistency of quality services and the low number of errors [27] (Deutsche Bank, 2015). Although digital banking has become essential for a large number of customers, there are still people who value more traditional channels. Even people who prefer banking through applications often opt for direct interactions for complex financial products. To maximize revenue, banks need to effectively combine digital channels with traditional sales channels. According to a 2017 survey, almost 60% of active bank users use digital channels. On the other hand, digital channels represent only 25% of banks' sales. Although digital channels have transformed the bank in many ways, most revenue still involves interactions with people (McKinsey, 2019). Figure 4 shows all the channels a modern bank should use in order to remain competitive. Figure 4: Distribution channels of a modern bank Figure: Multi Channel presence - Electronic Channels are accounting for a greater share of Bank’s transactions.



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As digital banking has evolved through multiple phases, banks have often used different, newer technologies that have been added ad hoc to pre-existing systems. Such use of technology has resulted in high maintenance costs and it is estimated that US banks use 80% of their maintenance investments (Cuesta et al, 2015).

Figure 5: Bank technology IT expenditures (billion dollars)

Source: Cuesta et al (2015.)

To prevent the recurrence of such situations in the future, it would be desirable to create appropriate and transparent metrics applicable to the entire financial system. They should be designed to allow verification of whether it makes sense to make the investments they make and whether they have resulted as expected of them.

V. THE EMERGENCE OF FINTECH ENTERPRISES

The word Fintech was created by combining the words finance and technology, and it means combining financial services with solutions based on modern technology. As with the notion of digital transformation, there is no consensus on the definition of the word Fintech. The Oxford Glossary defines the word Fintech as the software and other technologies used to support or enable banking and banking services. To better understand the term Fintech, a series of definitions are presented in Table 2.

Table 2: Definitions of the term Fintech

Author (s):	Definition:
Micu and Micu (2016.)	Fintech is a new sector in the financial industry that incorporates technology that uses and finances how it trades, corporate acquisitions or interactions and services that lead to low-cost consumption.
Maier (2016.)	New companies that are developing companies using financial institutions using technology to create value for some newcomers.
Schueffel (2016.)	Fintech is a new financial industry that uses technology to enhance its financial activities.
Gomber et al. (2018.)	Fintech is a company that innovates and leverages the functioning of the financial sector. Uses a wide range of communication tools, most notably focusing on the Internet and automating information processing. From recent business models such companies expect more flexibility, security, efficiency than the code established by the financial services.

Source: Breidbach, Keating, Lim (2020).

In addition to defining the term itself, it is important to understand how Fintech companies appear. It is well known that finance and technology have evolved in parallel for decades. In the early 1950s, ATMs were introduced to replace human workers and provide self-service to bank customers. The advent of payment cards has led to a reduction in the need to keep money, and the increased internet connection has led to an increasingly available bank. The digital revolution has significantly changed the environment and the way banks operate. In the financial sector, most companies have embraced the importance of new technologies and digital transformation to improve customer satisfaction and, ultimately, their success. In addition, innovations in banking and new technologies have led to the entry of Fintech enterprises that have a tremendous impact on banking operations [30]).

On the other hand, if an event that led to the emergence of these new companies should be noted, it can be said that it was the economic crisis of 2008. One of the consequences of the economic crisis is the understanding that the activities of large financial institutions can generate risks systemic, which has led to the creation of measures designed to assess the amount of this risk. Regulations have been developed that provide guidance and guidance on how to avoid risks and, in many cases, requirements to increase solvency. The new, stricter regulation increased the burden on financial institutions in two ways:

(a) directly, because they needed to have larger reserves and thus reduce activities, and

(b) indirectly, because public opinion considered them the main culprits after the financial crisis [31].

With the development of the economic crisis, a large number of customers, especially young people, are losing trust in traditional banks. It is not clear to them why they should trust banks to save their money or give them good financial advice when banks

have not been able to control the risks they take. Generations of customers are willing to turn their backs on banks and see the emergence of new companies that were not part of the economic crisis and that can offer them innovative solutions. In recent years, a number of Large enterprises have entered the financial sector and exploited the gap between the new needs of bank customers and the often outdated services provided by traditional banks. They are differentiated by the fact that they do not have such strong regulatory constraints, better organizational structure and culture within the organization.

Fintech companies actively and successfully offer technologies and services in which traditional banks, insurance companies and other companies in the field of finance operate. They create an ecosystem that cultivates ownership of large amounts of data and builds consumer confidence. Financial institutions have begun to understand the importance of Fintech companies and their ecosystems and are trying to establish partnerships with them to pass on some of their innovation to themselves. When one understands the importance and influence of Fintech companies in the world, one should know that their business also brings certain risks, which Nicoletti states:

1. Financial service providers and financial markets are often considered very secure, but with the development of technology, the capabilities and resources of hackers are also evolving. They become much more organized, and in some cases, can be coordinated by states, and Fintech companies could be vulnerable to their attacks.
2. Fintech companies have high regulatory risks. Technology generally and often neglects borders between states. In the case of Fintech companies, national boundaries are not important from a technology perspective, but from the perspective of different regulatory agencies, they are. Although Fintech companies perceive regulatory agencies as a barrier, a higher level of cooperation between them is expected in the future.
3. As traditional banks are in many cases low flexible and need a lot of time to change, there is a risk that the accelerated development of Fintech will negatively affect their business. If banks fail to improve financial technology fast enough, there is a possibility of losing a competitive advantage in the global market.

VI. **CONCLUSION**

From what has been said above, we conclude that the development of technology at the end of the last century and during this century has significantly affected the lives of people. The Internet enables the creation of new business models and the adaptation of companies. Every company now has the opportunity to compete in the global market, and in order for companies to cope with rapid change and new customer needs, they must implement a digital transformation. Digital transformation in companies is becoming a very popular term most often used in the context of technology, but it has a much broader, organizational and social context. The digital transformation market is a fast growing market and almost all companies believe that the lack of digital transformation can significantly affect their business. Multinational companies are transforming business towards digital and bringing in people who have expertise in this field to ensure survival in the new environment. Furthermore, the positive social impact of digital transformation and the efficient use of resources must be ensured: companies must adapt employees to the digital age, restore trust in data privacy, and use digital initiatives for environmental sustainability. One of the industries in which digital transformation is most evident is banking. Technology enables simpler transactions, reduced operating costs, increased profitability and market differentiation. The main basis for doing business in the bank is information and money, and the development of technology makes it possible to turn them into data that can be managed digitally. The banking market is characterized by strong competition that is becoming even greater with the advent of Fintech companies.

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