

Financial technologies impact on banking services.
New threats and new opportunities

A Master's Thesis submitted for the degree of
"Master of Business Administration"

supervised by
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Vienna, 30.06.2017

Affidavit

I, **Minofiev Sergey**, hereby declare

1. that I am the sole author of the present Master's Thesis, "Financial technologies impact on banking services. New threats and new opportunities", 71 pages, bound, and that I have not used any source or tool other than those referenced or any other illicit aid or tool, and
2. that I have not prior to this date submitted this Master's Thesis as an examination paper in any form in Austria or abroad.

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ABSTRACT

Informational and communication technologies change traditional business models and provide new value chains. Banking, one of the last which has not been destroyed by new digital revolution, is facing unprecedented changes. The new generation do not see banks as part of their ecosystem and their lifestyles. They do not need the bank but felicitous banking services only. Known as FinTech companies provide attractive alternative banking solutions and could convert traditional banks into archaic commodities. On the other hand, banks cannot quickly adapt to the new conditions due to many restricting factors and limitations, they are scared to lose out business in competitive struggle.

This research addresses the systemic issues within the banking, highlights it weaknesses and how FinTech cope it using their opportunities to create new banking services. It outlines bank's strategic solutions for a long-term sustainable growth. To sum up my research, I concluded that strategically for our retail bank it is necessary to move in several directions:

- To evolve the new type of lending with a view to bridle the new disruptive crowdfunding trend and attracting new FinTech teams;
- To investigate the evolution of the new disruptive technologies as blockchain, trying to implement projects based on it and be ready for quick adaptation in the future;
- Transform current business model towards open innovation and open API economy.

Research hypothesis that traditional banks will be replaced by banks of a new generation, think and act as FinTech and with FinTech, was confirmed. In the competitive struggle between banks and FinTech companies will win a partnership.

Over the next few years FinTech banks will displacing traditional business model and follow the principles of flexibility, openness, and customer focus. This banks in the mobile customer's gadget will operate as a platform with any kind of digital banking services from different players.

Research clearly indicated that this is the final call for banking leaders to examine the opportunities arising out of the combination of three elements: digital penetration, FinTech potential and extremely upping value of an open innovation, and to intend the jump to the new business paradigm.

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List of abbreviations

AML	Anti-Money Laundering
API	Application Programming Interface
DNA	Deoxyribonucleic acid
ICT	Information and Communication Technologies
IT	Informational technology
KYC	Know Your Customer
SME	Small and medium-sized enterprises
TPP	Payment Service Providers
P2B	Peer-to-Business
P2P	Peer-to-Peer
UX	User experience

1. Introduction

1.1 Problem formulation

Rapid development of ICT, their penetration into all activity fields, renders profound economic and social impact and changes established way of life. Numerous digital technologies enable users to interact with each other in a new way which leads to further radical changes in people's behaviour and adaptation of their lifestyle to new technological capabilities. New digital technologies have vast potential for upgrade of capabilities and review of current business models increasing range of possible services, their speed, and reducing cost. Digital revolution changes traditional business models and provides new value chains¹.

Financial industry is one of the last which has not been completely destroyed by new digital revolution distributed by successful hi-tech companies, electronic retail networks, and social networks. Nowadays the banking sector around the world is facing unprecedented change. Start-ups and giant high-tech companies are jostling traditional banks in the market, pushed by new technologies. Known as FinTech companies is a new phenomenon which provides alternative banking solutions and business models, could convert services, provided by traditional banks, into archaic commodities. This worldwide trend become very visible and it may endanger around a third bank's profit over the next few years.

Do banks guess it? The answer is affirmative. According to statistics published in *Global FinTech Report 2016*, 88% of representatives from traditional banks consider that part of their business is at risk of being lost because of FinTech². One of the key functions - payment function, inherent in bank sector - is already almost completely performed by new FinTech companies. New payment systems are being created. Replenishment of the cell phone and its application not only for communication, but also for banking functions creates an obvious threat for banking sector. Besides it, there are crypto currencies which compete with cash. For instance, there is already a whole city in Finland inhabitants of which have passed to this

¹ Kelly, 2014, p.9

² PwC, 2017, p. 2

payment way for goods and services³. FinTech start-ups have contributed also to saving function of banks. One more example deal with the problem of low interest rates in Europe⁴ which force to create by FinTech a new app which helps the customers to use banking services at the banks of other countries with more favourable interest rates.

So, what should the banks to do? And how should they change? The obvious answer to the first part of this question would be to introduce new solutions. But how? After all, people who are experienced in banking sector and aware of its internal operational processes know that banks are not capable to fast changes. A well-known researcher of financial markets and author of several bestsellers Chris Skinner mentioned that “banking and innovation doesn’t go together. Innovation creates risk and risk is unacceptable in a financial marketplace”⁵.

For historical reasons banks has always been responsible for innovation development of financial sector. All earlier created radical innovations, such as credit card in the beginning of 1950s or ATM in 1970s changed the process of money circulation and ways of banking services rendering. Several decades have passed since then and now it is time for a new financial revolution. The Internet has become generally accessible. Development of ICT has opened new possibilities which change financial assets management ways. New IT giants have set a new service quality level for a customer and development of innovations at banks does not depend only on banks anymore. The new non-bank participants who can offer alternative set of banking services have entered the market. Electronic wallets, crypto currency, contactless technologies, possibility to get a loan and to send instant transfer without the bank - these are examples of companies of the new generation, as a rule, headed by former bank managers who have seen new possibilities in the modern current.

Despite rudiments of a new financial revolution, many banks react still rather inertly and probably underrate the new current or do not simply know where to move. In many respects, the situation is worsened by unreceptiveness of banks to innovations and by conservative views on any changes. This structure cannot satisfy dynamical needs of a new customer who is already perfectly aware of new digital solutions. With the help of ICT technologies FinTech continues to win the market and penetrates areas and geographical regions which

³ Nikitina and Galper, 2016, p. 28.

⁴ The European Central Bank, 2017

⁵ Skinner, 2017

are still ignored by banks.

Today there are many opinions, rumours, and statements about financial technologies and their influence on banking sector. The banking community should choose a reasonable approach to upcoming changes in order "not to get lost" in this information field. The banking sector should distinguish between speculations, unreasonable escalation of problems and precious knowledge for building of development strategy.

The main threat for traditional bank consists in the fact that absence of any actions and letting the things "as is" will surely enable FinTech to win considerable share of bank's income thanks to its potential. The bank is not a sole service provider anymore; alternative services of third-party companies appear to be more advantageous and proper for a customer. While changing the ways for performing bank's functions, FinTech satisfies people's needs quicker and better. Finally, a customer realizes that he needs not the bank but its services only. This approach is particularly attractive for a new generation which has grown on social networks and Internet technologies and will always appreciate service quality and satisfaction from service above all.

So, is there a threat for banks and their services from upcoming new phenomenon called FinTech and how serious is it? What are the advantages and what is the nature of FinTech? What is the reason of customer's dissatisfaction with the banks and how can it be overcome to win back customer's loyalty? Will the banks manage to reform themselves and what should be done for it? What business model should be chosen for a new development strategy? The bank has indisputable advantages like carefully generated customer database and extensive sales network, necessary skills and ability to process huge data files securely. How can the bank make these advantages work for its benefit?

Today banks and economy have a unique chance to transform the business model and to find a new approach to the customer by satisfying his needs. The fact is that the institution which can make a more profound analysis of these changes, estimate customer demand changes, and assess risks and possibilities for the company by transforming its culture and strategy will manage to take the leading positions in the banking market.

1.2 Objective of the thesis

In my Thesis, I review several key problems related to necessity and ways of transformation of the modern banking business model in connection with global changes in environment and rudiments of the new digital financial revolution.

This research assembles key insights from leading world economists and bankers, CEO of top startups from finance, regulators and technical experts and are underpinned by research based on my own experience and long years of working in the bank area and IT.

Today bank community has different opinions concerning changes around banks and influence of new FinTech companies on banking business. As a rule, I face inconsistent opinions and information about it. Regardless of the FinTech risks the first group of respondents is extremely optimistic. They assert that FinTech surely does not constitute any menace for banking sector and the current splash of activity will settle down in the nearest future, when banks absorb all changes and continue to act as the main and the only one supplier of banking services and products. According to their words, phenomena like this have already happened in other branches as well and stronger institutions with greater financial resources and state support have always won the fight⁶.

On the contrary, the second group is rather pessimistic. They think that FinTech will seize the banking services market completely and will undermine banking business in its traditional meaning for ever, putting banks in the position of pure providers of infrastructure and commodity products in extreme cases⁷. Moreover, new ways of money circulation based on blockchain technologies or, for example, new methods of work with big data because of artificial intelligence will make the Bank to intermediary for nominal operations of simple account at a complex back office system.

My research hypothesis assumes essential dependence of the banking services and the whole banking business from FinTech innovations and changes in the digital world. The hypothesis is that the banks will not go anywhere and continue to exist, but under the influence of the FinTech and digital revolution will inevitably change. Traditional banks will be replaced by

⁶ Chaika, 2017

⁷ Drummer, D. et al., 2016, p. 4

banks of a new generation working as FinTech companies. Knowledge of the banking business essentials will lean towards knowledge of new IT technologies and capability to apply them quickly in a new ecosystem, for the benefit of a customer.

Today we can assert that changes are coming forth. There is a new digital financial reality. Everybody who want to develop the business further and to straddle a wave of new changes, instead of acting on the off chance, should research the current changes into detail and undertake relevant measures. Therefore, the present research aims to analyse the current changes, to discover essence and nature of phenomena which have caused hectic discussions, and to try to define the key directions for understanding the new reality and making correct decisions.

In Master Thesis I'm focusing on the emergence of new phenomenon - FinTech, the nature of its genesis, its impact on the banking services, banks' strengths and weaknesses in new environment, how legislature to respond on emergence of this new phenomenon, why consumer and his expectations change, what potential risks arise due to FinTech and, finally, what kind of new threats, opportunities arise around this digital revolution.

Working in the big retail bank, it is vital to understand the future trends and choose the right strategy. Thus, the purpose of the Master Thesis is revealing of the main factor groups influencing the current changes in the banking sector, detection of the basic trends, and offer of directions and ways for adaptation to new conditions for construction of a new business development model and strengthening of positions in the banking services market.

1.3 Method overview

Scientific researches and concepts generalizing principles and mechanisms of the banking sector transformation in the epoch of penetration of new digital technologies into economy and society, changes in consciousness and behaviour of the new user generation, and influence of digital technologies on consumer properties and expectations are of great importance in theoretical and practical respect.

The general scientific system approach for the analysis of regularities, revealing of reasons and key sources of technological changes happening in the financial environment, complex consideration of economic interaction processes in allied economy industries which have

already undergone transformation under the influence of ICT development were applied at carrying out of research and material exposition.

Research methods include scientific generalization, methods of historical analogy of changes happening in allied industries, methods of statistical, cause-and-effect analysis and expert estimations, and the method of logic simulation of possible development scenarios and future trends.

The following sources served as the research information base:

- library databases: The Vienna University of Technology Library, Vienna University of Economics and Business and Russian State Library;
- articles, published works, and materials of Professional MBA in Entrepreneurship&Innovation program;
- statistical data of the leading countries in the field of financial technologies implementation including Bureau of Economic Analysis of the USA, Office for National Statistics of UK, Federal Service of the State Statistics of the Russian Federation;
- Internet sources of the leading world companies, conspicuous and trustworthy scientists, researchers and experts with vast experience in the fields related to direction and topic of the present research;
- materials on participation in more than 10 international conferences, seminars, hackathons on banking technologies development, blockchain technologies, FinTech industry including London FinTech Week, The Blockchain Innovation Conference in Tel Aviv, Future FinTech in Moscow, Money20/20 in Singapore;
- discussions and polls of top-managers of large Russian banks, heads of IT companies, experts in the field of financial technologies and representatives of innovative laboratories and FinTech companies concerning the future of banks and influence of FinTech companies on bank's development;
- own knowledge and more than 15 years of work experience in large banks including position of the Head of IT department in of the international retail bank.

1.4 Structure of the thesis

Thesis research consists of 5 chapters.

The first chapter presents topicality and demand for a chosen topic, research objective, the main hypothesis, questions and problems which should be disclosed by results of the carried-out research. Methodological and theoretical basis of the research with indication of the main information sources is described in the present chapter as well.

The second part reveals the nature of mistrust to the banking system, reasons and barriers preventing the banks from introduction of innovations and quick adaptation to new digital revolution, competition with FinTech companies. Changes happening in the user experience of “a new bank's customer” and the reasons why emotions have become too important at new services are described further. Thereupon we pass to a new phenomenon called FinTech, its origin, advantage of small forms of entrepreneurial activity compared to large ones, the main trends of FinTech company’s development, and scope of their activity. The basic directions which should be studied and adopted by the bank, like blockchain technologies, crowdfunding, new legislative initiative PSD2 which makes essential changes to bank's activity are also described in the second chapter.

The third, empirical part is devoted to description of three key directions which should be followed today by any retail bank. These are three types of project which, to author's opinion, should be initiated in any big retail bank:

- formation of crowdfunding platform for attraction and financing of new start-ups including the financial technologies area;
- customer's identification with the use of blockchain technology;
- project on transformation the current business model for the bank considering new trends in environment and changes in the legislation field.

The fourth chapter presents the main conclusions of the Thesis, and the last one is about future trends which the bank should follow.

Research results are systematized, classified, and summarized in the present master thesis.

2. Theoretical aspects of FinTech formation

2.1 Crisis of banking system. Barriers to innovate

The banking sector proved to be very susceptible. Established banks have suffered from the world financial crisis of 2008; there was a wave of mass bankruptcy of businessmen, many people felt uncertainty in tomorrow; faith in the state has been shaken. Consumers' trust level to traditional banking sector has decreased.

Another one crisis of the banking system led to review of financial system model with a possible accent on companies of a new formation, online competitors which enjoy more customer's trusts, so that traditional banks will be in their shade.

At the same time, the banks continue to execute their traditional functions: a) fund-raising, accumulation, and investments of temporarily free funds; b) lending, or rather intermediary in lending. Banks carry out intermediary function in lending by redistribution of funds which become temporarily available in the process of circulation of enterprises capital and monetary incomes of private individuals; c) execution of payments, or intermediary in payments between separate independent subjects, which is often understood as bank's intermediary activity in payments. Payments of enterprises and citizens get transferred through banks. And in this respect, banks are endowed with intermediary mission while being between the customers and making payments by their order⁸.

Current changes which occur under the influence of ICT rapid development, occurrences of new digital technologies and change of customer's demand relate to transformation of ways for execution of these functions and meeting of customer's requirements and expectations eventually. Meanwhile, according to the poll carried out in 2012, 5 years after the crisis, 71% of respondents in the Great Britain think banks have drawn no lessons from what had happened⁹.

Will the banks manage to integrate into new realities and will they adapt their business model

⁸ Shrier, D. and Canale, G. and Pentland, A. (2016)

⁹ The Guardian, 2012

to new conditions to keep the leadership in banking services? Should there be any concerns about appearance of companies of the new formation? To find the answer to this question we will consider traditional banks' ability to generate and to exchange innovations.

Since 1960s, the banking systems have not undergone any radical changes; they are still not flexible enough to develop innovations their customers have been waiting for. The reason is that banks are not designed for innovation and have never done this before. And until recently there has been no need for the banks to change anything. Why should they do anything differently when they still irreplaceable and profitable? Banking historically has been the business most resistant to disruption by innovations. Their innovations are incremental, and despite the advent of the Internet, the Web, and more recently, mobile technologies, banks remain very conservative organization with all attributes of exploitation activity.

These are the key features stressing banks' exploitation model and their barriers to innovate:

- centralized, rigid hierarchical organizational structure with bureaucratized internal processes and regulations. Any new problem or project are executed according to "waterfall development" plan, at which requirements are carefully defined and described at the very beginning of the project and the results are obvious only at the final stage. This is a destructive fact for launch of any innovation;
- the strategy is developed for a medium-term period and has deal with risks' minimization, while the innovation activity is the second task and not the business;
- absence of professional IT assessment as a part of board of directors at large banks;

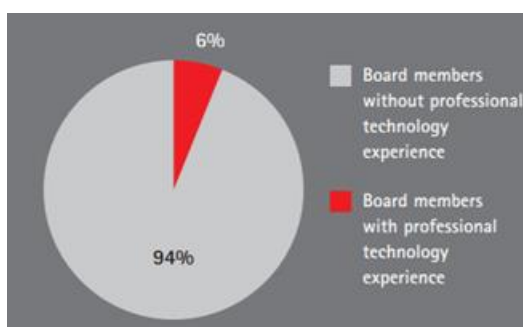


Figure 1: IT experience of board members the world's banks¹⁰

¹⁰ Lumb, 2016, p.8

- overregulated processes from the central banks. Repeated financial crises which are often caused by the banking system bring the state supervising bodies to necessity to toughen banking system regulation. The banks have to rebuild all processes around to satisfy new requirements, while all innovative solutions remain on the background¹¹;
- non-transparent internal culture which demotivates the ordinary performer's role and requires observance of strict rules and internal norms and is not intended for generation and sharing of new ideas;
- bulky, outdated, and pricey heterogeneous IT infrastructure which is not intended for quick changes. Banks rely on outdated IT systems and architecture with very complex product offers. As a result, according to estimations, about 14% of banking costs are spent for IT sphere which made \$461 billion in 2014, thus 75% of this sum was spent for maintenance service¹².

New digital channels are being developed to replace nonflexible, outdated IT structures, which leads to increase in costs and complexity. As a result, banks spend more for support of their IT infrastructure than the largest technological companies for research and development do.

The situation is aggravated with increased quantity of financial and standard restrictions after another one financial crisis. There were new requirements to capital and liquidity. According to the research of CCP Research Foundation, the banking operations risk cost (including bank reserves) increased by more than 200 billion £ in 2010-2014¹³.

Banking assets have undergone a strict check with stress tests too. Many large banks were fined for non-competitive and unfair behaviour in the market¹⁴. This entailed necessity to spend the biggest part of resources for execution of regulator's requirements, rather than for development of new market objectives and innovations.

The banks have got at a deadlock while trying to cope with enormous operational costs,

¹¹ Athwal, 2015

¹² Ferrari R., 2015

¹³ The CCP Research Foundation, 2015, p.2

¹⁴ Lomakin, 2016, pp. 69-72.

structural rigidity, stiff functionality, inflexible internal infrastructure which is expensive for any changes and pressure from the regulator. As a result, today traditional Banks render customers only services they are able to render, not the services the customers are waiting to get from them. In 2015 Antony Jenkins, Barclays' ex chief executive said that "The universal banking model is dead"¹⁵.

2.2 New user experience

Before discussing a new phenomenon called FinTech and reviewing arisen discrepancies, I would like to dwell upon one question of particular importance for analyzing future trends – user emotions. Exponential growth of the digital economy has changed consumer habits and technological platforms. Distribution of digital channels not only has strengthened consumer expectations, but has also considerably changed the ways of service rendering. Services like Facebook, Uber, Airbnb or Kickstarter have all disrupted their boundaries, bringing consumers together, bypassing traditional practices.

People have already got used to efficiency, convenience, and individual approach available in apps downloaded to their gadgets for management of the key aspects in a daily life. The transfer from the economy based on services within the scope of which companies including banks build interrelations and gain income by gradual expansion of service package to economy where experience and impressions of the user have primary importance is already obvious in many customer-focused branches. The same point was made by known futurologist Patrick Dixon:

"You can get really focused on technology and the latest innovation, but the fact is the future is about emotion. It's about how people feel about technology, it's about how people actually want to live, and that's what really makes the difference"¹⁶

So, designing new services, banks should strengthen consumer emotional experience. The question is why so many consumers do not trust the banks and why do not cause customers positive emotions from bank's service. Why despite the efforts to reform and transformation, do consumers trust in banking so low? These events continue to strike consumers of banking services. This is exactly an area to ripe for disruption and growth. The key point is to

¹⁵ Arnold, 2014

¹⁶ Dixon, 2015, p.37

understand what customer expectations and wishes, and do not ask them what they need, because the answer should be about Henry Ford's "faster horses".

People have some reasons. And they are not only the fact that banks are too-big-to-fail organizations that to clear out public finances when they do fail or that they are predatory that cause huge financial crises and bring many to misery. There are also other, more obvious reasons, for instance:

- Banks often charge fees for services that customers feel should be free or low cost (e.g. account maintenance fees or overdraft fees);
- The banks operations are mysterious, but customers consider mystery with suspicion, especially when it deals with money. Customers feels limited freedom and fears that banks are controlling them, or making unfair business;
- Banks with their big staff of lawyers and economists to prevail under customers psychologically causing discomfort and subjection, remaining indifferent to the clients;
- Bankers try to bundle customers with a lot of unnecessary cross-sell products, trying to squeeze out at any opportunity the extra profit;
- Banks are very far from the client centered approach where the customer is in the first place and everything is around them. Maybe that is why banks focus not on the quality of services and innovative products but on customers' thousands of claims, foremost considering the most important ones that threaten the bank with penalties from the regulators.

It makes sense, banks really react very slowly to changes in customers' demands. And if we are looking on companies that have won the customers' trust, this companies, first, try to understand the customer pain and make an improved transparent service. They are focused not on receiving huge sales, but on integration of services into customer needs of, the solution of their problems and simplification of their life. User-centered thinking is the key point which stimulates loyalty and trust of customers.

Another one factor influencing emotions is design. Modern IT solutions draw much attention not only to technology itself, but both to perception and reaction of the user arisen after technology implementation. Design has always had a secondary role in banking services

sphere. The situation has significantly changed after emergence of new digital possibilities. Nuances of relations between the customer and the product are reflected in and, in many respects, depend on design. For instance, change of button's appearance on the website of one large Internet retailer has increased its annual income by USD 300m¹⁷. Removing of one column from sign up form brought Expedia company USD 12m¹⁸. Duena Blomstrom, expert in UX, confirms our assumption: “People don’t “need” products. They don’t have a checking or current account “need”. Consumers have Physiological and Safety needs that these products satisfy”¹⁹.

The key ways how FinTech redefine customer expectations and experience are: focus on mobility, focus on simple and intuitive user interface, automatization and personalization on the first line. All mentioned parameters reflect extremely big importance of user experience in the banking, its focus on customers, and work with a specific person, constantly push themselves to make product easier or simply better to use. In McKinsey research one of key six digital imperatives for banks looks like as: “Bank should create a well-designed, segmented, and integrated customer experience, rather than use one-size-fits-all distribution”²⁰.

2.3 Emergence of FinTech. Disruptive opportunities

2.3.1 Emergence of a new phenomenon - FinTech

Financial technologies are usually understood as innovative technologies application for rendering of financial services. There are a lot of definitions in different researches of FinTech. This is a branch of economy consisting of companies using technologies for rendering of financial services in a more efficient way. Most of companies of this branch are start-ups created to make a breakthrough in already available financial systems and

¹⁷ Spool, 2009

¹⁸ Correll, 2016

¹⁹ Blomstrom, 2015

²⁰ Dietz, 2016

organizations which do not use software²¹. A business direction based on application of software for rendering of financial services²².

In my opinion, the best and the fullest definition of FinTech was given by Gartner company:

“FinTech is startup technology provider that deliver emerging digital technologies that approach financial services in innovative ways or can fundamentally change the way bank products and services are created and distributed, and generate revenue. The term may also refer to the technologies these providers offer”²³.

The term FinTech was introduced by the Silicon Valley where a plenty of IT startups were created. Today London is considered as FinTech capital which is explained by numerous innovations in financial technology and powerful investment streams. Great Britain provides developed infrastructure, smoothly running legal system, flexible tax policy and intensive investment support²⁴.

FinTech can offer a full range of financial services which has been offered earlier by banking organizations only. The FinTech essence consists in three simple words: “manage it by yourself”. FinTech offers transparent technologies and affordable and trustworthy services. The key reasons of FinTech wide distribution have been already mentioned. These reasons include rapid ICT development, mistrust of the population to banks and dissatisfaction with received services, increase in social networks popularity

which enabled to offer new kinds of financial services based on information exchange between users (for example, crowdfunding, P2P remittances and financing, social trading, etc.), demographic changes in the world and increasing spread of cell phones, desire of new millennial generation to share experience with a wide range of people, increased requirements to services and design usability, information quality and rate of its receipt²⁵.

2.3.2 Key characteristics of FinTech. Advantages of small business form

The small form is one more important reason which, in my opinion, outlines the key

²¹ Fintech Weekly, 2015

²² Munch, 2015

²³ Moore, 2017

²⁴ Kalmykova and Ryabova, 2016, p. 243

²⁵ Gonzalez, 2016

characteristics of the FinTech and the origin of current changes more precisely. The key advantages of small forms which emphasize potential possibilities of FinTech are described below.

- high dynamism, flexibility, rapid decision-making

Small enterprises estimate their position in the market quicker, focus on small consumer groups, constantly refine non-revealed demand and consumer expectations, and react to varying market needs keenly, whereas large structures are stiff and often afraid of devaluation of already invested funds and influences on current business by new products.

- risk appetite

Small enterprises incur risk related to new product creation easier and act as pioneers in a new field of activity; they are ready to work on innovations which may seem unpromising, low-profitable, and risky to other companies.

- creation of the new markets, identification of promising technological niches

Small enterprises often possess private information and are aware of consumer expectations in specific market segments which is not the case of large manufacturers focused on wide consumer interests and "graded demand". Revealing of specific needs of certain consumer groups makes it possible for small and medium-scale business to fill "bottlenecks", new niches, and potential markets by satisfying private and local consumer expectations.

- low indirect costs level due to extremely reasonable management

Flexibility, narrow specialization, and precise focusing of small-scale business ensure high efficiency at low level of expenses. According to statistics, companies with staff less than 100 people produced 4 times more products at every dollar invested to research and development than companies with more than 500 employees, and 24 times more products than companies with more than 10000 employees in the USA. They create 2.5 times more

efficient innovations than large companies²⁶.

- high rate of development and launch, significant reduction of innovation cycle duration, acceleration of funds turnover
- low barrier to entry the market and low capital need.

Small enterprises also have some lacks like weak level of product diversity, moderate scope of available resources or dependence from large companies. But, as a rule, these lacks eliminated by government support and developed infrastructure. If we compare the advantages of small forms with opportunities of FinTech, their genetic tendency to innovate becomes evident. It makes FinTech innovative, dynamic, agile, with focus vision and easy to use. They rely on advanced technologies, and do not have any legacy and cumbersome IT architecture and high regulatory demands as banks have. They need only fewer but highly professional team. They achieve customer expectations with flexible internal operation processes and client centric strategy, to speed up their innovation circle. They establish a new benchmark on market for digital user journeys using creative and unique features. They are enabling customers to install exciting services with one click²⁷. Undoubtedly, these features have disruptive influence on banking business opportunities and sales force.

In confirmation of our research turn to another very attractive conclusion conducted by Deloitte, in which the company summarized five-year research together with the MIT Sloan Management Review, presented in appendix 1²⁸. The presented report reflects the results of their research and those cultural changes that should happen in companies to become new and digital. As we can see the differences fully correspond to our results, specifically: for traditional company resistant to innovate, to be sustainable and conservative on the first place, inflexible hierarchical organizational structure, slow waterfall development, regulation-determined risk appetite and all other characteristics which have already mentioned before. And, on the other hand, inherent FinTech agility, innovative and customer centricity.

²⁶ Small Business Administration USA, 2003

²⁷ EYGM, 2017, p. 37-43

²⁸ Andrus, G. et al., 2016, p.5

2.3.3 Expanding scope and FinTech disruptive opportunities

Banking services will be always in demand, but the demand for banks has significantly decreased after emergence of FinTech. According to McKinsey research (see appendix 2²⁹) in retail banking Fintech share roughly is already about 10% of total revenue. In the beginning of 2015, Francisco Gonzalez - chairman and general director of financial group BBVA - forecasted that a half of international banks will disappear under the pressure of digital industry³⁰. McKinsey&Co - global consulting company - mentioned that the banks can lose up to 60% of profit within the following ten years due to new FinTech companies in its annual review on the banking industry of 2015³¹.

The potential of FinTech developers can shatter prestige of current brands and grasp their share in the market. On figure 2 you can see that the scope of services and product offered by FinTech is expanding very rapidly. If initially companies have concentrated on payment applications, lending and money transfers, nowadays the number of areas have extended more than on 30 areas.

In each area, different FinTech companies have a lot of technologies to use. The fact is that FinTech are underway outside a customer's needs and suggest a wider range of services, expanding the traditional industry's boundaries.

One good example is a new Spanish start-up Holvi Payment Services which created a fresh banking service to SMEs and now expand their range of services to an online sales platform, online counting services and advanced cash-management system. By the way, in 2016 start-up have been acquired by Spanish financial group BBVA³².

The shift leads to the fact that FinTech cease to be focused on front actions and become concentrate to broad participation in all chain of value creation. New offers cover a wide range of financial services: wealth management, retail, SMEs, insurance, corporate and investment banking. This drive to outdate of some traditional services and reduce the of

²⁹ Dietz, M. et al., 2016, p.2

³⁰ Finextra, 2015

³¹ Dietz, et al., 2016, p.5

³² BBVA, 2016

banks' profit³³.

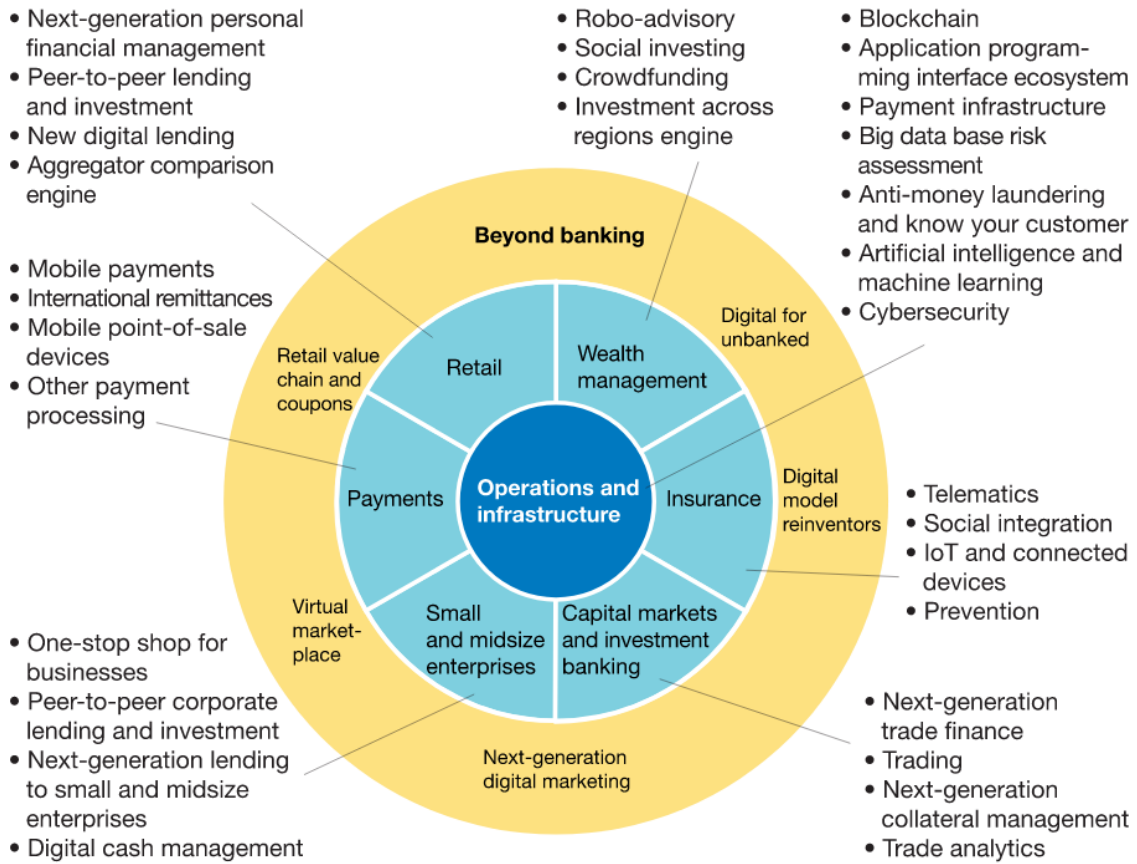


Figure 2: Key FinTech trends³⁴

Besides increasing the scale of services in a specific segment, FinTech is expanding the range of services through the interaction between different product lines and industries, becoming more diversified and launching new business models throughout business units and geographies. For consumers that live in rural locations or regions without the equipment and infrastructure of a modern economy, access to financial products and services is becoming more attainable than ever thanks to mobile phones and cellular networks.

³³ Hinkis, 2016

³⁴ Dietz and Lee, 2016

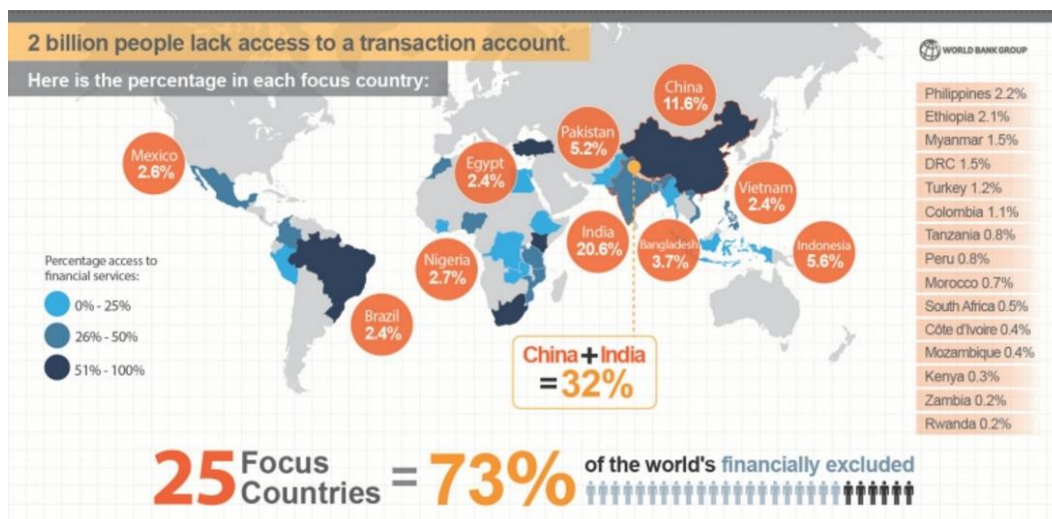


Figure 3: Achieving global banking services by 2020³⁵

Another area that FinTech companies are tackling is access to loans. In most developing countries where the vast majority of the population is unbanked³⁶, it can become a challenge for individuals and businesses to get a loan. By 2020, one billion adults currently excluded from traditional financial systems will gain access to some form of banking services³⁷. Figure 3 highlights tendency on the increasing role of financial technologies and prospects to gain the new niche of banking.

2.4 Banking services transformation. Main trends

2.4.1 Partnership or competition. Current trends

Another clear trend deal with banks' attempts to assimilate FinTech innovations and adapt them according to their clients' needs³⁸. McKinsey's most recent analysis suggests that the structure of the fintech industry is changing and that a new spirit of cooperation between fintech startups and incumbents is developing³⁹.

³⁵ The World Bank Group, 2017

³⁶ Rajeev and Vani, 2017, p.47-55

³⁷ The World Bank Group, 2017

³⁸ Chishti and Barberis, 2016, p. 13

³⁹ Dietz et al., 2016, p 177

For example, Barclays bank has opened the largest European innovative centre which will unite the work of over 40 FinTech start-ups and representatives of various banks in London⁴⁰. According to information from Barclays, a new platform will become the European largest co-working space for FinTech projects whose participants will have to take more than 200 hours of training, seminars, hackathons, and development of joint products monthly. The new project is a part of the bank's global initiative which has already covered cities like New York, Manchester, Mumbai, Cape Town, Vilnius, and Tel Aviv. One of Barclays co-working initiative directions consists in optimizing of cooperation process between representatives of blockchain business, artificial intelligence and start up developers working with BigData.

Banks can actively cooperate and experiment new technologies and FinTech companies, revealing thereby developing trends and new markets, as they appear. It enables banks and their customers to do things faster, better, and with lower expenses.

CULedger blockchain initiative supported by dozens American credit unions was presented to the wider audience within the scope of large presentation in Arizona in May 2017⁴¹. CULedger project based at the end of the last summer is supported by more than 50 credit unions, FinTech companies, and large Banks. Initiative members state that they want to use technology for improvement of lending agency functioning by raising their competitiveness in the conditions of increasing toughening of financial institutions working environment.

Russian FinTech company "Ubank" presents a service with the help of which the one can pay for cell phone services, Internet, housing and public utilities, and other services by transferring money to the account at any bank. "Ubank" service cooperates with Raiffaisenbank, Bank of Moscow and Bin Bank issuing bank cards for service users⁴². FinTech Modulbank worked based on Regional credit bank. However, in March of 2016 the bank was renamed and is now called Joint-Stock Company Commercial Bank Modulbank.

A very interesting cooperation plan was offered by the German bank Fidor. Its key know-how is FidorBank community 70% of which is formed by bank customers consulting each

⁴⁰ Finextra, 2017

⁴¹ Higgins, 2017

⁴² Korshunova, 2016

other and getting money bonuses for advises. Now its members can borrow or lend money to other members of Fidor community and participate in joint financing.

Another one interesting cooperation example is that the payment of commission fees of HDFC, the second-large bank of India, has reduced by 30%⁴³. To cope with this situation the bank started cooperation with Internet shops, like Snapdeal and Flipkart. These shops launch their trading platforms at bank's site and return a part of commission fee for carrying out of commercial activity to the bank.

There are two most probable scenarios of further events, this scenarios are also considered in the report of Accenture company “The Future of FinTech and Banking: Digitally disrupted or reimaged”⁴⁴.

Scenario 1: banks fail to adapt themselves and lose out in competitive struggle.

Scenario 2: banks realize importance of customer service quality, introduce innovations within the scope of their business models and cooperate with new players.

Certainly, the second variant is more probable, since such a cooperation will lead to diverse situations which are mutually advantageous both for financial services sector and for its customers worldwide. Cooperation of banks and FinTech branch has an enormous potential which may define the further development vector of the whole industry, since the technologies capable to update financial sector can be created by joint efforts only. Many banks have already realized that cooperation is a better solution than compete. They began to launch incubators and special venture funds, partnered up, and, finally, started to buy start-ups. Strategies are different, but they all pursue one goal: to survive and even to earn on digital technologies breakthrough.

2.4.2 Potential disruptors for traditional banking

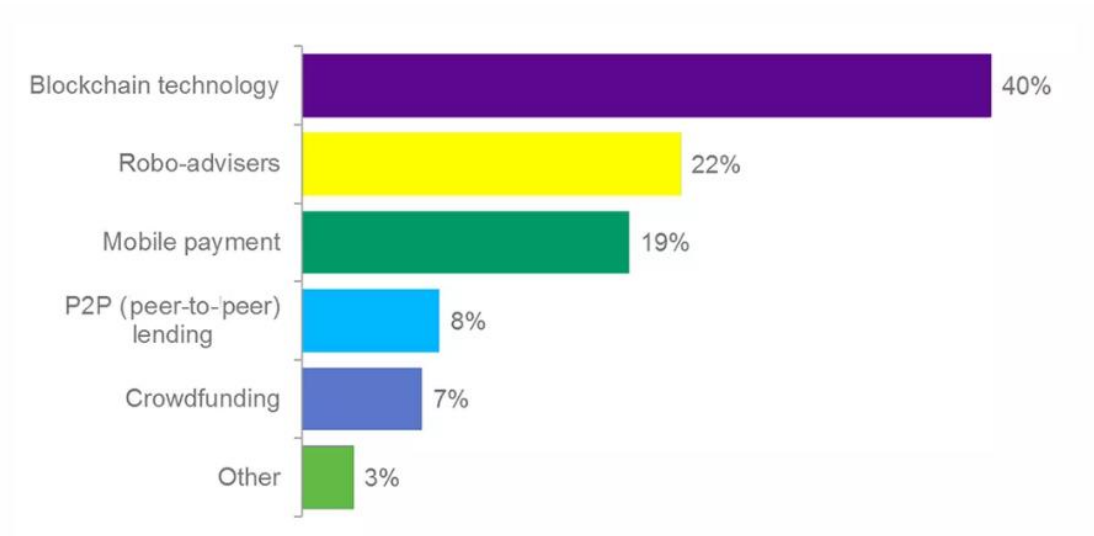
In October 2016, CFA Institute Financial News Brief published the report⁴⁵ with areas of FinTech which will bring the most significant changes to the financial services industry in a

⁴³ JHALANI, 2015

⁴⁴ Skan, J. et al., 2015

⁴⁵ Cao, 2016

few years. Blockchain was on the first place and crowdfunding was among them too.



* Results do not add up to 100% due to rounding.

Figure 4: The most significant changes to the banking services

I would like to dwell on these two basic directions of FinTech which are the most important for retail bank and further research.

2.4.2.1 Blockchain technology

Blockchain technology is a considerable scientific and technical breakthrough, a radical innovation which can change not only financial infrastructure but also the general setup in the majority of key branches. In one of its researches, PwC company has stated a powerful potential of transactions blockchain technology application. The advantages include considerable simplification of accounting, facilitated access to financial products for citizens of developing countries, improvement and simplification of daily financial transactions, etc.⁴⁶.

Transparency Market and Grand View company consider financial sector to be the main driver of blockchain market growth for today. During the forecast years of 2016 and 2024,

⁴⁶ CoinSpot, 2017

the global market is expected to rise at a CAGR of 58.7%⁴⁷.

This is caused particularly by growing need of business for enhanced security of online payments which can be achieved with the help of decentralized technology. Besides, J.P.Morgan affirms that blockchain has won financial services sector venture capital of which is mainly invested in technological start-ups. According to J.P.Morgan, investments to blockchain start-ups have already reached \$300 million, and this value increases quickly. By estimations of PWC, investments into blockchain industry made up \$1,4 billion within 9 months in 2016⁴⁸.

More than 2000 start-ups were launched worldwide and the number of patents in this sphere exceeded 3000 within the recent 3 years⁴⁹. For the first time in history of international legal practice, bitcoin, the first digital currency based on blockchain technology, is recognized as a legal payment tool payment in Japan since 1st April 2017⁵⁰. The number of people willing to use this digital currency in the country has exceeded all expectations significantly. There are two Tokyo shops of household appliances called BicCamera among retailers which started to accept bitcoins in the beginning of April. A giant of household electronics in partnership with Bitflyer (the largest bitcoin stock exchange of Japan) agreed to accept digital currency. Large retail networks and websites of e-commerce are expected to introduce bitcoin payment in 2017 and 2018⁵¹. Thousand shops have already filed an application for acceptance of bitcoins.

The Bank of England plans to introduce blockchain technology in payment infrastructure by 2020. In March 2016, the government of the Great Britain has presented a strategic plan called “UK Digital Strategy 2017”⁵², the key role in which is dedicated to solutions based on blockchain technology. In April, 2017, the governor of the Bank of England Mark Carney declared that a new online gross calculation system will be compatible with a technology of distributed ledger and will differ from other similar systems by quality thanks to its innovative approach eliminating numerous intermediaries and, accordingly, reducing

⁴⁷ Transparency Market Research, 2017

⁴⁸ Kennedy, 2016

⁴⁹ Sheltsin, 2016

⁵⁰ Nochevka, F. 2016

⁵¹ Gimigliano, 2016

⁵² Forklog, 2017

operational costs. Distributed ledger technology can essentially promote accuracy, efficiency, and security of these processes. It will enable to save billions pounds and will considerably enhance system's stability.

Here some blockchain application examples in the banking sphere: Interbank and international remittances, KYC in interbank business, automation of securities life cycle, trade financing, syndicated loans, cross-border trade, databases of insurance experiences, non-public distributed ledger for KYC/AML, loyalty programs.

Only from the beginning of 2017, there have been numerous examples of successful applications on blockchain technology by banks all over the world, such as:

- In the end of February, 2017, the largest Japanese bank group Mizuho declared completion of tests of two solutions based on blockchain technology. Projects were developed with assistance of a well-known American company called Cognizant. The bank has successfully tested a prototype of blockchain system for syndicated loans granting. The second test included carrying out of transactions between affiliated bank structures; thus, the funds were sent with the help of recently created own digital currency.
 - The management of Postal Savings Bank of China declared successful completion of tests of blockchain system for control over key assets developed together with IBM company.
 - Research department of Reserve bank of India (IDRBT) tested blockchain solution developed for local banking system. The app for performing documentary operations introduced both by regulator and commercial banks has been developed because of works.
 - National bank of China has successfully finished tests on issue of digital bills approved and accepted by the bank.
- The Russian Sberbank declared creation of a prototype of interbank blockchain system for fraud information exchange.

Certainly, this is a technology that deserves an attention from banks. The strategy should consider the possibilities of new disruptive technology and closely follow its evolution.

2.4.2.2 Alternative crediting and crowdfunding

While the traditional bank works with standard questions and examines bureaucratic red tape of its substructures, FinTech offers a transparent approach to credits and loans and aims to make credit or investment more affordable, efficient, and transparent. This loan kind works by disintermediation principle (refusal of intermediaries); transactions between buyer and seller pass on special trading platforms. According to the World Bank report⁵³ the crowd⁵⁴funding services would reach \$90 billion by 2020, but If the current trend continues, we'll see \$90 more yearly.

Crowdfunding is a collective collaboration of people (donors) who unite their money or other resources voluntary to support efforts of other people or organizations (recipients). The key feature of crowdfunding is a reduction of intermediary's role at financing, banks, venture capitals, and stock exchange. It should be mentioned that crowdfunding can be used both by small companies and large enterprises. This tool enables not only to attract means, but also to estimate potential success of a new product or project by studying of consumer's interest to it.

Crowdfunding in Russia is a completely new phenomenon. It is underdeveloped, both in the number of platforms, and the number and size of implemented projects. There are several reasons of that, such as low level of financial literacy of the population, a low proportion of the middle class in Russia, a low level of innovation and entrepreneurial activity, several unresolved legal issues that hinder the development of this directions.

At the same time, according to official statistics, in 2016 there is an extreme deficit of financial funds for small businesses and new start-ups as long as the number of small enterprises is about 2.1 million units and the number of individual entrepreneurs came to 3.42 million people in Russia in recent years⁵⁵. The financial situation among entrepreneurs evaluate mostly negatively. Partly it is affected by economic crisis in the country. Startups traditionally rely on their own funds as the main source to finance their business. They

⁵³ Emmerson, 2015

⁵⁴ Morabito, 2016, p.43

⁵⁵ Federal State Statistics Service of the Russian Federation, 2017

usually prefer to borrow from relatives and friends, not from the banks or venture funds.

The popularity of bank loans in recent years sharply reduced. The main reason was the crises which lead to the growth of interest rates and toughening of banks' requirements to the collateral and financial position of the companies. And because the banks are responsible for the credit risks to regulator and investors, banks behave in the market is extremely conservative.

Banks are not eager to support risky startups because it is not the easiest and perspective business opportunity for them. SME lending makes the Bank to have a huge organizational structure of risk managers, underwriters with a special SME background as this area differs much from Corporate lending and PI lending. SME customers are not in favor of taking bank loans as they do not find it the simple way to find investments. SMEs need to spend much time on documents preparation, negotiations but finally most of the applications will be rejected which creates a negative experience for an industry.

Meanwhile, market research analysts (for example, one of the leading universities of Russia, Higher School of Economics) show that a significant percentage of people who have a stock of money, also consider the possibility to invest in products and projects. However, they are stopped by a variety of reasons: lack of information on objects of investment, fear of a non-return of the money, ignorance of the legal subtleties connected with investment process, lack of a flexible opportunity to take away the money and complexity of procedure.

According to crowdfunding potential and its threats for retail banking business on the one hand, and the business needs for additional start-up's lending, including FinTech companies, on the other hand, there is an opportunity to create an own instrument, crowdfunding platform that will resolve these issues and will expand the lending capabilities by bank.

2.4.2.3 Regulation shift in banking

European regulators recognized that the domination of banks and their limited technological development in European countries, as well as a low level of development of payment instruments leads to stagnation in the innovative development of the banking sector and limits competition among financial sector participants. For the possibility of deeper penetration of FinTech companies, the disclosure of its enormous potential and the

acquisition of synergies from combining the capabilities of banks and FinTech companies, and the banking legislation has begun changes that soon will radically change the entire banking market.

On January 12, 2016 one of the most resonant changes in the banking sector was published - the new European Payment Services Directive (PSD2). One of its rules, it envisions obliging banks to open their APIs to third parties⁵⁶. As the work on the software platform for the new open API standard began in November last year, the so-called Open Banking Working Group (OBWG) was created; its purpose is to research the possibilities of data usage to manage loans and investments, simplify transfers, and manage deposit accounts. In one of its reports the group has stated that the creation of open API is necessary for outside services to be able to use banks' and their clients' data, including transaction information. At the same time, banks' clients must be able to ensure that their data are used under conditions of utmost security and control. At the end of the day, thanks to these measures clients will be able to choose themselves financial products that best suit their current needs. According to preliminary data, open API giving full access for transaction management for businesses and private clients will be available as early as 2019.

Banks will require to reorganize and open specific services needed for e-commerce as well as to third party Payment Service Providers (TPPs) which will appear due to new PSD2 directive. Banks should be not only the Account Servicing and Payment Service Provider (ASPSP) within the open platform for TPPs, but also to develop a seamless integration of these services, as well as to provide TPPs with complex users' information (Account Information Service Provider, AISP) and information about all the customer's payments (Payment Initiation Service Provider, PISP) within the framework of PSD2⁵⁷.

How it will be look like to the client? Nowadays, if the bank has provided its customer using a mobile banking service - then almost always it would be only one set of apps and no other alternatives, even if the customer do not like this apps, if they are slow and inconvenient, or, for example, it does not work on customer's mobile device, it does not matter - the customer still cannot change it. The new directive and open API approach solves this problem: it

⁵⁶ Morabito, 2016

⁵⁷ Demidova, 2017

allows to make competitive decisions by third-party FinTech companies which will be created specifically for the needs of the customer – using right configuration, flexible functionality and lower cost. The customer can download chosen app, as he now uses Google Play or the App Store and may select the application that he mostly likes. As previously we could open Internet using one browser and had no other option, now the same situation has affected banks. And this is a forceful step towards the client centric approach.

In addition, one of the important goal of this directive is the desire to simplify the customers' transition. In 2012 in the European Union, came into force a law that allows any EU citizen to open an account with a bank in any EU country. But only 0.1% of customers was used it. Why? There used to be a so-called “mobile slavery”, but now there is “banking slavery”. To switch from one bank to another, you should change all the details of cards in all places where you constantly pay, for instance, in iTunes store, Google play, Amazon and so on. Change the details of the salary account or the payments details for gas and telephone everything must be changed. With the introduction of the directive in force the situation can change, and the customer will be able to pass from bank A into bank B, having allowed bank B access to history of his transactions in Bank A.

More provident banks already catch new signal to start this open banking journey, as an opportunity to acquire strategic and competitive advantages in comparison with those banks which consider sufficient just to execute the new rules. The practical implementation of this project has already been reflected in several initiatives. For example, HSBC, RBS and Nationwide banks together with a number of FinTech companies, have already begun converting to the open banking platforms, allowing customers to establish an account in one bank, and to receive services in several optional via new interface⁵⁸. Such a concept is called BaaP, banking as a platform.

Also, integration of BBVA Compass and a startup of Dwolla for which the bank opened access to a row of program interfaces for authentication and payments can be a good example. The main idea was to develop the ways of identifying and protecting personal data and authenticating clients for online money transfers. If earlier in case of confirmation of the deposit of the client and sending money the score went for days, now due to Dwolla money

⁵⁸ Carey, 2016

transfers in real time.

It is obvious that the banks who are ready to start API projects and who are trying to adopt the culture of new products development, like FinTech, will be able to gain significant benefits from the forthcoming changes using PSD2 directive. But for this purpose, it is necessary for the banks make some efforts very actively.

3. Methods to transform our bank's business model

3.1 Research description

The practical activities based on the outcomes of the previous chapters analysis about of the reasons why banking services change and the outlined trends due to finance digital impacts on finance industry.

With no doubt, FinTech continues to conquer the banking services market, taking away from banks their share of profits. At the same time, the bank not able to swiftly reorganize itself due to the historically established business model, internal immunity to innovations, changes in consumer preferences. The bank should turn in the direction of innovation, to determine the response to those trends that have emerged because of FinTech and consistently change its own business model.

In this chapter proposed the practical steps to response to the three most important trends deal with FinTech which undoubtedly have an impact on the further development of the banking industry which should be implemented in the new strategy of our bank.

- Retail bank, having the majority part of the profit due to loan's activity, very depends on new FinTech's lending instruments and payment methods. It is real threat to the bank's sustainable development. The task is to design internally or, the better way, using third FinTech's competence its own crowdfunding and other service providing platform that will be retain bank customers and attract new customers using new methods of lending.
- The blockchain technology has all the characteristics of disruptive innovation. Banks face the prospect of losing the privileges to create money and their exclusive role of intermediary of all the financial flows of capital that they have played for a long time. Their role and function regarding the blockchain technology is not predictable. Undoubtedly, it is necessary to actively investigate this technology, to try to implement projects based on it, to gain awareness, understanding of its capabilities and to try to lead a number of these changes to gain first benefits to use it.
- New trends in the open economy are emerging and the new business models are taking shape. The new PSD2 directive maintenances the shift towards open innovation and

brings radical changes in the current processes both banks and fintech companies. Despite that new requirements have not been adopted in Russia yet, those structural changes that occur in leading countries, driven by the reason of PSD2, will certainly be initiated in Russia in the very near future. Our bank needs to carefully consider the coming changes, to identify the new business model and start a transformation process towards openness.

Further each direction revealed in detail.

3.2 Crowdfunding platform

Based on factors discussed in second part there is a business concept which consists in creation of a common crowdfunding platform that bring together the interests of all stakeholders in mutually beneficial cooperation of the parties (investors, SMEs, including FinTech, and the bank), and providing the necessary infrastructure for quality service to all participants.

This platform will afford to achieve such benefits, as:

- to integrate into the growing world trend of crowdfunding and to try to seize the initiative from new market players,
- to link investors and start-ups, and provide financial resources to FinTech companies which in future will allow to conclude a partnership with the most interesting and promising companies. The investor should have an opportunity to make the investments in a quick and clear way,
- banks could have a stable commission-income with low risk, considerable potential for development, list of potentially FinTech companies and the expansion of the customers segment.

This is the main value proposition of the new decision.

Business model

Business model of the proposed solution is presented below.

Key Partners	Key Activities	Value Proposition	Customer Relation	Customer Segments
<ul style="list-style-type: none"> - Customers; - IT companies; - Bank; 	<ul style="list-style-type: none"> - Develop online platform technically; - Develop a new scoring model; - Create an advertise and promotion programs; - Participate on online platform and coordinate customer participation, production and distribution; 	<ul style="list-style-type: none"> - New opportunities and quality for participants in mutually beneficial cooperation of all parties; - To do things in a quick and clear way; - Customer empowerment; - High level of security; - Reduction of costs and time; - Easy to use / usability; - Uniqueness; 	<ul style="list-style-type: none"> 1. Automated services - Internet platform (web services) based on Bank's website; - Mobile apps based on Bank's mobile application; 2. The customers have an opportunity to get all necessary information online, by telephone, or by using the platform; 3. Bank for customers offers a range of additional benefits and discounts for other products; 	<ul style="list-style-type: none"> 1. Multi-Sided Platform involves: <ul style="list-style-type: none"> - SMEs, Start-ups who seek financing; - Lenders/ Investors who seek an attractive investment opportunity; 2. Age group: mainly 18-55 years; 3. Clients of the Bank (especially for SMEs and Start-ups);
	Key Ressources <ul style="list-style-type: none"> - IT infrastructure; - Software vendors; - The participation of key divisions of the Bank (legal, product development, sales, marketing, contact center, security); 		Distribution Channels <ul style="list-style-type: none"> - Webpage; - Advertising in specialized media; - Customer referances; - Wide client's database treatment (by phone, online, etc) 	
Cost Structure <ul style="list-style-type: none"> - Software development and support; - IT security; - Marketing programs; 			Revenue Streams (details below) <ul style="list-style-type: none"> - Sales per year (Average loan amount) 2 000 000 RUB; - Number of loans per year 100 (for the first year); - Commisions per loan 4%; - Minimum investor's contribution is 10 000 RUB; 	

Table 1: Business model of the new lending service

The bank is developing a new online platform based on own secure infrastructure and involving the key departments and partners in this project. The potential investor comes on special Internet platform located on the website of Bank and opens the bank account in our bank and becomes our client.

The Bank which has a wide client's database, created special packages for investment on a certain principle - by type of company (startup or existing company), area of activity (FinTech, IT, wholesale, retail, production), profitability, financial stability, geographic location and some other parameters. This allows the investor to select business projects, as they seem to be the most reliable. The minimum investor's contribution is RUB 10,000 for a minimum period of six months, the interest the lender will receive under the scheme crowdlending - weekly to your bank account in equal installments. Thus, the first earnings will be available within 7 days. The yield of the investor at the same time may be up to 30%.

It is important to note that in the offered scheme the risk of loss or the investment completely lie on the investor and success is not guaranteed. However, the Bank, having many years'

experience in providing lending services to small businesses in the Russian and European markets provides maximum protective measures. Firstly, it will select the most reliable organization among its customers. The scoring model analyzing online business activity, the final product of the company, reliability of small business will be used for this purpose. Second, the Bank will distribute the investment among several companies all at once and will not go bankrupt. The bank receives income in the range of 4-10% on each transaction.

The companies who need money are also the acting customers of the bank and will be able to receive necessary money in one day online and without guarantee. They will pay not only a package of services, but also various commissions, and the effective rate does not exceed 45% per annum.

Customers

Loan crowdfunding in the Peer-to-Business (P2B) sense involves lending money to help fund a business. Peer-to-business lending involves:

Borrowers who pay for the access to the investors' money. Basically, they are small and medium (SMEs) sized businesses who seek financing (usually relatively small sums of money, e.g. up to RUB 2mln) and traditional ways of getting money are hard to access or it takes too long (e.g. via banks). In our case bank should make a special emphasis on attracting FinTech start-ups. It could be either a business that already existed for some time and is searching for additional money, e.g. for expansion or production materials purchase, or a start-up that needs to find financing to make their project real. For the latter P2B project not only provides capital for business activities, but it also gives the chance to test the idea, e.g. if the individual investors are willing to invest, this means the idea is "marketable".

Lenders/ investors are represented by private investors that are clubbing together. For lenders P2B lending is an attractive investment opportunity because it gives them higher interest rates than bank deposits, and at the same time it somewhat lowers the risks for each investor (lender) as they can invest from very low amounts, putting less capital at risk per loan and spreading this across several projects. In the case of P2B, investors are wide classes of normal people which are interested to make a small enclosure for the new promising ideas. It allows these groups of people a possibility to unite and invest. Moreover, P2B delivers this wide groups the decision

right what kind of ideas should be turned into new business and which are not. Contrary to bank which invests/ loans money based on the thorough check of financial risks, investors in P2B are more inclined to lend their money if they find the idea promising and interesting.

Competition

There is very little competition in Russia in the peer-to-business lending as this approach is new for the country. Here is the list of the most common competitors but they all have their own limitations:

Traditional banks. It is the most common and top-of-mind instrument to get money from. Banks are very conservative and tend to lend money to big companies with mass businesses much easier than to SMEs. Mostly it happens due to the reason that risk-return trade-off in crediting SMEs is not as attractive for the banks. Another reason is that banks not only need to make sure that the debtor will be able to return the money, they also need to persuade the regulators that everything is thoroughly checked and is legit which is complicated and time-consuming process. That is why it is often hard for SMEs and start-ups to get money from banks, especially considering raised credit prices and growing number of credit rejections from banks. Thus, fewer SMEs manage to get credit approval from banks and they have searched for other ways to raise money which opens opportunities for P2B lending.

Funds and the so-called “Business Angels”. The market of angel-investments in Russia is also new and relatively small. Often the role of business angels is taken by different grant programs and funds. Mostly business-angels invest money in start-up projects in IT sphere which leaves other industries out of their interest. Furthermore, considering current financial situation in Russia, high volatility and lack of stability, business angels prefer to invest their money into foreign projects which again opens opportunities to us.

Venture capitalist. Again, no direct information how big the segment is in Russia. It is known that the main barrier to growth of Russia’s venture capital market is the lack of objective information. Foreign and domestic investors do not have sufficient reliable data and analytical materials on innovative markets and projects in Russia. This slows down the search for investment targets, makes investment decisions more difficult, increases costs for project analysis and due diligence, and restricts the size of the pool of potential venture

investors. Both business angels and venture capitalists in Russia are sitting “in the same boat” here: for proper development of these segments there is no infrastructure, no clear regulations, guarantees or support from the government side and no tax exemptions for such investors.

Crowdfunding platform in Russian market is summarized in table below.

Name	Type of investments	Number of projects that received investments	Number of investors	Funds, mln., RUB
IPOboard	Purchase and sale of LLC's share (offline); Purchase and sale of AO shares (online, through the infrastructure of the Moscow Stock Exchange, NRMs and brokerage accounts)	17	310	100
Start Track	Purchase and sale of a share (offline)	34	1261	626,2
Simex	Equity investment agreement (free loan + option)	27	N/a	46,3
Constart	Purchase and sale of a share (offline)	N/a	26	N/a

Table 2: Characteristics of existing crowdfunding platforms

The most interesting competitors are IPOboard platform and Start Track.

IPOboard platform was established in 2012 to provide financing for prospective non-public companies in the early stages of growth (pre-IPO financing) and subsequent circulation of their securities in the over-the-counter market. The system provides an opportunity to invest in companies of any organizational and legal forms through various types of financial instruments: loans, shares, bonds. Today more than 310 private and institutional investors are actively cooperating with the IPOboard and their number is constantly growing. Most of the services are carried out online: automatic matching of profiles of investors and projects, business valuation, initiation of transactions.

IPOboard is planned to launch an online marketplace with remote identification and scoring of investors and companies. The combination of BigData and Artificial Intelligence technologies with access to specialized databases and internal block resources will automatically generate detailed standardized analytical reports for companies and automatically monitor the financial position of companies. Transaction processing will be implemented on the blockchain platform and will be able to support the creation of an unlimited number of cryptographically unique asset identifiers (e.g. ISIN). After the issue, the trade will be carried out based on smart contracts, and each transaction on the IPOboard will be a smart contract. This is the main competitor on the Russian market, but this company is not focused on FinTech companies and banks are not involved in its activities yet.

StartTrack platform was established in 2014 and positions itself as an investment crowdfunding platform. Due to the high entry threshold for investors, this project can be described as a club of business angels and venture investors. Now the site's work primarily at the Moscow region. And this is give us an additional advantage, because we will seek our customers in different countries.

The minimum amount of investment in shares is 1 million rubles. The commission for the services of the site is paid by the borrowing company. To invest in a business or project, an investor needs to pass accreditation, which takes place in the format of an installation meeting with representatives of the site with the investor. Now about 1,300 investors actively cooperate with Start Track and their number is constantly growing.

A hybrid scoring model with elements of venture and credit scoring is used. In the medium term, a transition to statistical models of venture scoring SMEs is planned.

At the end of 2016, according to the Start Track official statements, on the average there are 4.3 transactions per day. On average, according to data received from Start Track, the share of equity transactions on the Start Track platform is about a quarter of all site transactions.

Market potential

The full idea of Peer-to-Business investments is based strongly on connecting businesses with individual investors. The fortunate relations influence on the raised capital and new investment possibilities. If one of the parties is not able to collaborate the results could not

be reached. Thus, P2B could be characterized as a way to set the connection between entrepreneurs and new investors willing to invest minor amounts. Thus, in evaluation of market potential it is important to look at this question two-sided:

- interest and attractiveness of the P2B project for the potential investors (money supply);
- interest and attractiveness of the P2B project for start-ups (money demand).

According to the data from the National Bank of Russia⁵⁹, in 2016 SMEs loaned from banks on 40% less than it was in 2015. Partly this decline was caused by lower interest of SMEs towards bank loans due to increased cost of credits and partly it was the result of growing number of credit reregistration from the banks' side. All in all, a major part of this 40% decline could be our potential market on the side of lenders.

At the same time, Russian population is steadily becoming more finance-literate and is gaining more experience in the world of credits. Considering high inflation in the country, more and more Russian people want to save their money and make deposits in the banks (e.g. in 2016 banks received 20% more deposits than in 2015). The recent trend for Russian lenders is to put their money in foreign currency in the banks of Belorussia to get higher interest rates. It indicates that Russians are willing to earn more/save their money under conditions of high inflation and exchange rates volatility. Furthermore, they are searching for ways how to improve profitability from lending money. So, we assume that such individual investors would also be willing to participate in our P2B project due to higher interest rates than they could get from bank deposits. We only need to raise awareness among them of possibilities that our project can provide.

Production and sourcing

For production, we should develop a platform which will be simple and easy to use for final users. It should be available both on PCs as Internet-portal and as mobile application.

Both potential debtors and lenders should have access to the platform. Borrowers should

⁵⁹ <https://www.cbr.ru/statistics/?PrId=pdko>

provide all necessary information which should be uploaded to the platform:

- Entity registration documents;
- Address of the office/production place;
- Credit history for the entity and all shareholders/co-founders with a scan of the history from credit bureau including the requests of the loans and decisions;
- Age of the business (number of months since official entity registration);
- Information of all assets which are owned by entity and all shareholders/co-founders with the scan of the documents;
- Bank statements (turnovers) for previous 12 months with a scan of documents;
- Tax declaration for previous year available;
- Comments on the reason to borrow money, proposed term of the loan and simplified business plan.

In case of own scoring model for instance it could be just a simple sum of the points based on the number of provided data. For example, one point for each two years in business, one point for credit history without and delinquencies, one point for each disclosed asset and etc.

The platform shall calculate the score immediately after potential debtor uploads the materials but the score should not be the decision point for interest rate at which money will be taken. All the documents should be confirmed by electronic signature which could be provided to any legal entity in Russia and equals to paper signature. Potential debtors should decide about maximum interest rates by which they will be ready to borrow and maximum loan amount they need.

Platform officers will check the documents and open all the information to investors. Therefore, PI will have a possibility to visit the actual addresses of the business if they will need it and they can look at the scores and interest rates. Juicy projects will gather money quicker and investors will have less time to analyze and will have to decide quicker until the needed amount is not gathered by potential debtor. Investors could have a possibility to invest by small portions or lend a whole amount which SME would like to gather.

One of the most important bricks for the success of the platform will be the sourcing of the customers. We should speak about both sides: borrowers and lenders.

There are following sources for SME borrowers are visible:

- Credit brokers who are approached by potential borrowers to find investments to their start-ups or existing businesses;
- SME and FinTech startups which loans' applications were rejected by the Banks or other financial institutions, but interesting for our bank. In case the Bank develops such platform, it could own rejected applications. Also, the such applications could be purchased from other banks like leads but it will be paid only in case of SME will gather all needed amount of money in order the platform to get a commission;
- Advertising at SME business forms and conferences;
- Advertising at start-up exhibitions, especially IT and FinTech industry events;
- Advertising in mass-media.

There are following sources for investors are visible:

- Sourcing of the existing Bank's customer base. People who are not satisfied with current interest rates for deposits/concerned about financial markets investments could be approached with very clear information about possible higher interest rates for riskier investments;
- Advertising at mass-media. Especially media-portals about banks, financial markets;
- Lead-generators.

The most important thing in sourcing of the customers is a clear communication of all potential risks, legal consequences and possibility to lose all the investments. In such case the platform's reputational risks in case of SME defaults will be lower. Of course, it affects business expansion as aggressive sales could drive to quicker profits but it makes the business model more sustainable.

Potentially debt collection and other legal services could be proposed to the investors by the platform. Such services could be used in case of defaults. There could be not only pure debt collection activities but also restructuring negotiations with SMEs, organization of lenders' committees etc. IT Security activities, payments confidentiality is also a potential revenue option.

Business profitability

The main profit driver and the only one at the first stage of business development will be the commissions from SMEs. As Russia is the country of high inflation and high interest rate for the borrowers we could suppose that the interest rates for loans at such platform will cost 25-35% annually (bank rates vary 17-25% for SMEs). Such interest rates will be fruitful for the investors as it is significantly higher level than for classical bank deposits (vary 9-11%). Platform could have a complex commission policy to have a tuned approach for the potential borrowers. Commissions could differ based on the terms, on exposure (costs for platform will be almost equal for EUR 10,000 and EUR 100,000 therefore the commission for smaller tickets must be higher) but overall, we could target 4% commission. Initial costs will be purchase of the scoring models and advertising. Therefore, simplified income statement could look as following (all amounts in RUB):

	1-st year	2-nd year	3-rd year
Average loan amount	2,000,000	2,240,000	2,508,800
Number of loans gathered through the platform	100	200	250
Loans gathered through platform	200,000 000	448,000,000	627,200,000
Commissions	8,000,000	17,920,000	25,088,000
Platform Development and IT support costs	-10,000,000	-2,000,000	-2,000,000
Marketing costs	-12,000,000	-5,000,000	-3,000,000
Additional services commissions - collections		1,000,000	1,400,000
Number of staff	3	3	3
1 FTE cost per month	120,000	134,400	150,528
Staff costs	-4,320,000	-4,838,400	-5,419,008
EBIT	-18,320,000	6,081,600	14,668,992

Table 3: Income Statement for three years

It based on the following assumptions:

- Targeted average loan amount is RUB 2mln.;
- No costs for scoring model purchase. Bank model is used in case Bank develops own platform or simplified own-developed model is used;
- We need to have 1 FTE for marketing functions (advertising, exhibitions, analysis of new sources for the customers) and 2 relationship managers (negotiation with investors, brokers, borrowers);
- Inflation is 12% and affects staff costs and average loan amount;
- Collection services are implemented from the beginning and will create revenues from the 2nd year;
- Main IT costs are driven by platform development and allocated on the 1st year. Two other years only IT support costs are to be paid;
- Marketing costs are decreasing from the 2nd year as the customers (both investors and SMEs) will promote the platform to their mates.

It could be seen that platform became profitable from the 2nd year and all investments will be returned after the 3rd year. The most ambitious and difficult target is number of loans gathered and average ticket amount. Anyway, this platform bank will be used not for the profit, but for attracting potentially interesting Fintech companies for future collaboration.

3.3 Identification. The blockchain project

According to Experian⁶⁰, there are 26 accounts on one adult citizen of the Great Britain on the average; citizens at the age from 25 to 34 years create up to 40 accounts. Noteworthy is that all accounts have the same password, as a rule.

User identification is a rather challenging task requiring a non-standard approach. It requires technology enabling to identify the user on the Internet, irrespective of his location instantly and definitely. This technology is essential for retail banks which are present in various

⁶⁰ Experian, 2016

countries and have hundred million users⁶¹. One of the problems every bank has to face is connected customer's difficulties which arise if the customer wants to use services of other bank or other company without personal presence at offices of these companies. These difficulties are caused by long, laborious identification and recognition procedure. If we imagine that identified customer has once saved his personal data in a secure database at any authorization point (bank, IT company, social network or the grocery Internet shop) which can be accessed only by him or with his consent, then he will only have to refer to this database at any other place requiring his personal data for identification. So, he will not have to create new accounts with hundreds of fields for identification.

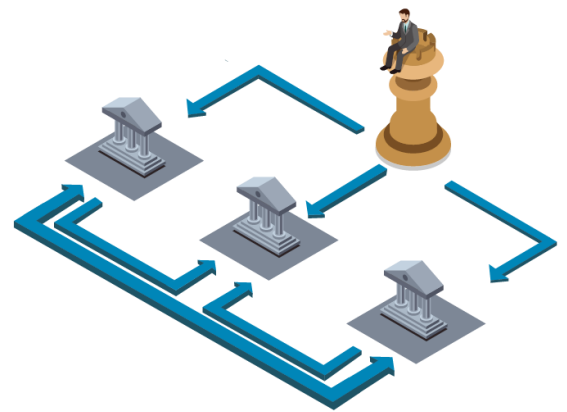


Figure 5: The unified remote identification

Blockchain technology is the most obvious tool capable to solve a problem of guaranteed remote identification of the customer and share of these data between stakeholders.

The developed system prototype will help to identify customers for other organizations remotely. Thanks to decentralized system, all the user has to do is to request, for instance, a service of another bank through the app. The user may not be the customer of this bank. The banks will perform identification independently using blockchain technology. Thus, the access to numerous banking services is realised by "single window" principle.

The remote identification scheme between two banks is represented on the block diagram on figure below. The most interesting for us is stage number eight where we load our identification code into the blockchain.

⁶¹ Shaker, 2016, p.57

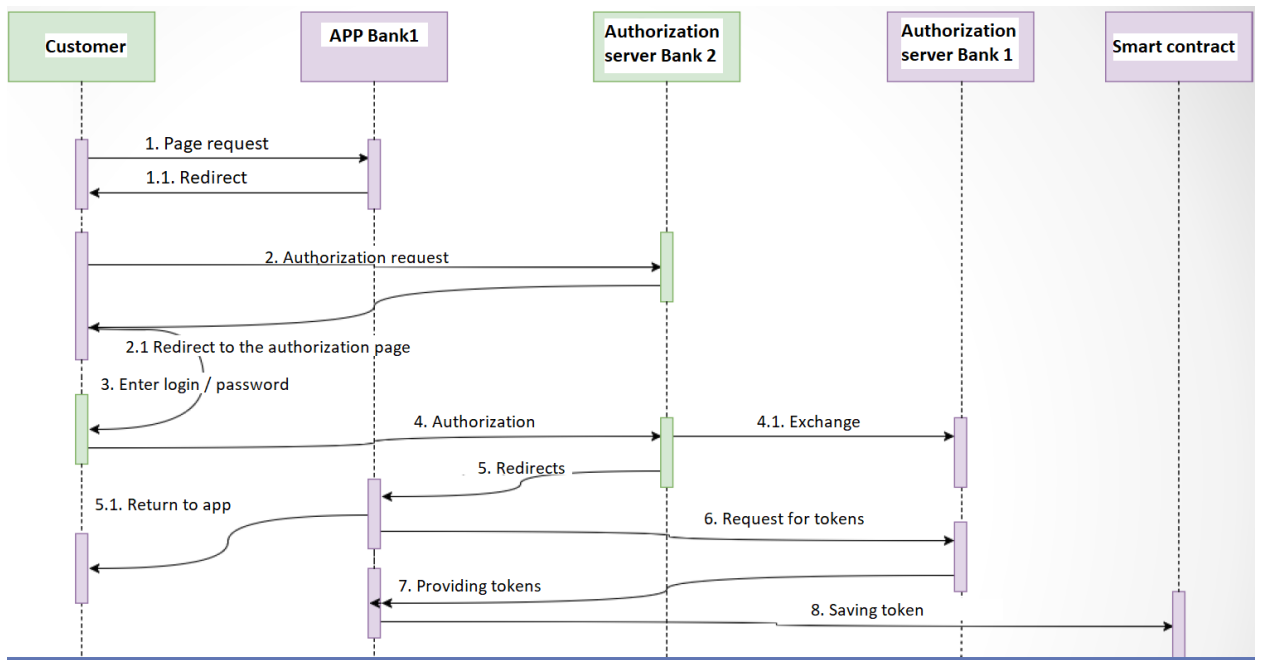


Figure 6: The remote identification scheme on blockchain

There are many blockchain platforms now. However, from the point of operational readiness, the most developed are Ethereum and Hyperledger. These two platforms were chosen in our project for prototype development. Ethereum would enable to implement MVP (minimum viable product) thanks to support of Microsoft within the scope of DevConSchool: Blockchain event much quicker. Therefore, the project will be implemented on the basis of Ethereum blockchain platform and will use Microsoft Ethereum Consortium Blockchain infrastructure which is a part of AzureBlockchain as a Service solution.⁶²

Ethereum is a platform for development and creation, distribution of decentralized apps. So-called Smart Contracts are used in Ethereum. These are programs which live in Ethereum network and perform a set of actions every time they receive a transaction.

Uploading customer hash is represented on the block diagram presented below.

⁶² Ethereum Blockchain as a Service (EBaaS)

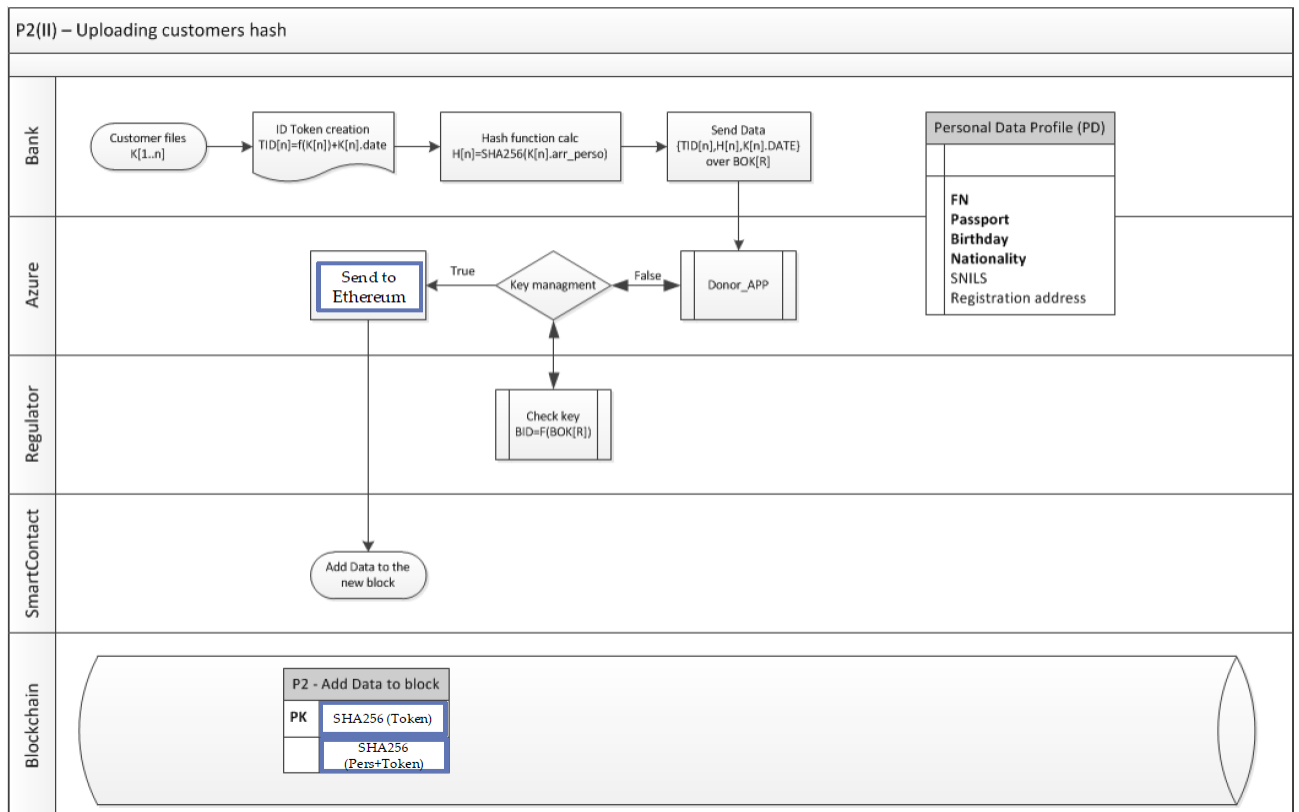


Figure 7: The uploading customer hash scheme on blockchain

If the customer applies for a service to a bank in which he has not yet been identified, the customer's action is the following:

1. The customer shall enter his personal data proprietary;
2. The client chooses the participant he wants to be identified through;
3. In the participant's trusted environment the customer goes through the authentication, for instance, through the login / password. In the future, this could be a fingerprint or scan of the eyes retina, stored in the blockchain through Ethereum' smart contract.

After these stages, the identification data will be reliably stored in the blockchain system. Now, if it necessary, the client anywhere in any place around the world, where exists access to this storage system on blockchain, will be able to read his data and quickly pass through the identification. Customer remote identification is represented on the next block diagram.

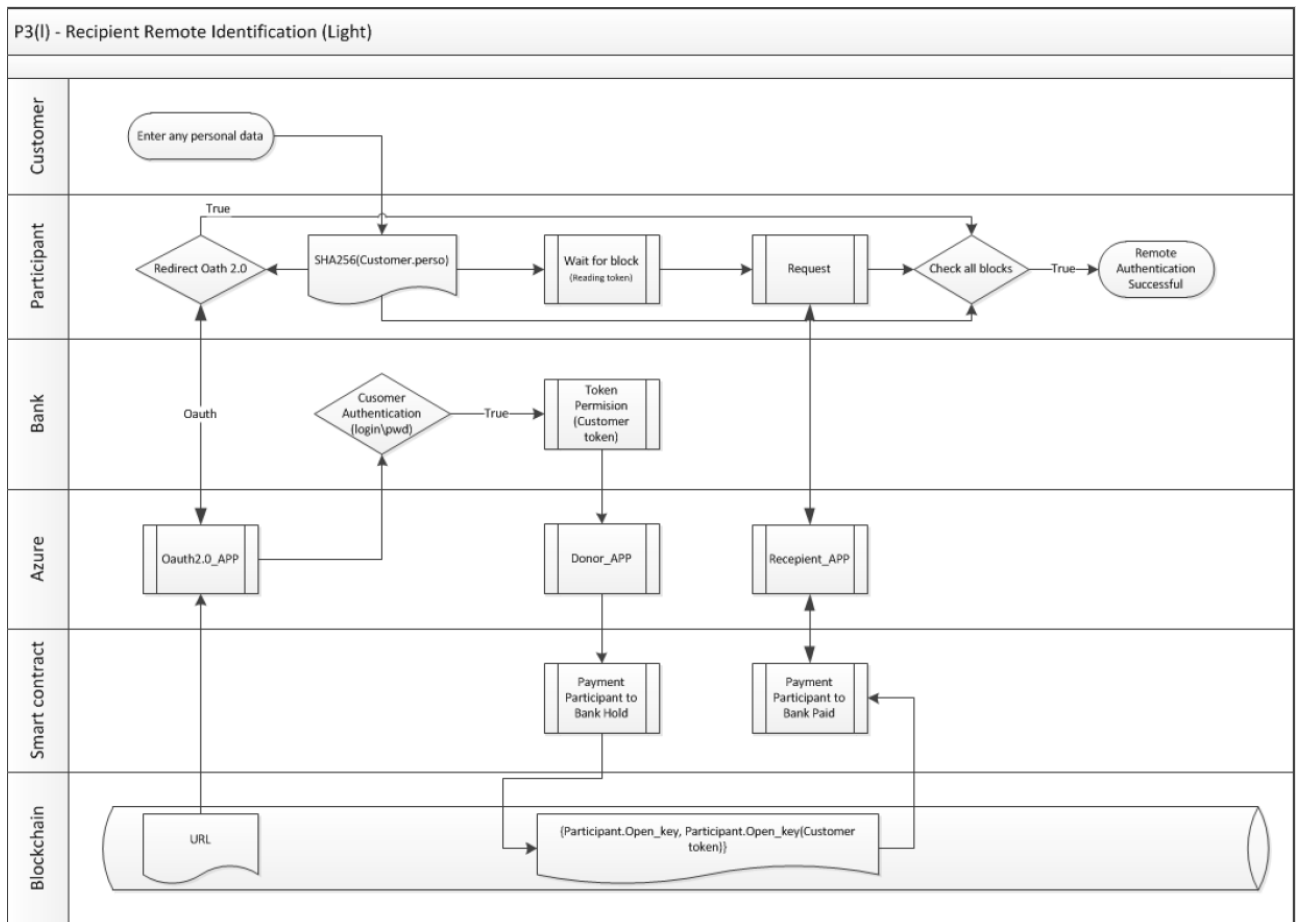


Figure 8: The Recipient Remote Identification scheme on blockchain

Application of blockchain technology will be transparent for the customer. However, even in a current legal field remote identification expands volumes of funds which can be transferred including with the help of electronic payment way essentially. Besides, this service can be useful for those customers who want to get access to exchange. Even today broker account can be opened for a customer using remote identification.

Currently customer tokens are used as a proof of identification data transfer between participants. In the future, it will be possible to connect “identification blockchain” with other blockchain platforms (for example, bitcoin).

3.4 Open API business model

Fast transformations in the banking sector are forcing the Banks to adapt their business under

new realities, introducing new ideas and technologies. Banks should do this wisely and accurately, without current business damage, with low costs, high pace and low risk.

Traditionally, big banks depend on internal R&D to create new products and large internal R&D departments, with a strategic complementary asset and a significant entry barrier for the other competitors. This process in which banks investigate and commercialize their services known as the closed innovation model.

According to known banks' weaknesses to innovate and Fintech advantages, widely distributed knowledge across customers and competitors, desires of venture capitalist to invest in the new technologies, banks can no longer wait and need to engage in alternative innovation business model, to change own innovation strategy. And new legislation norms (PSD2) are pushing banks to accelerate these changes.

Big companies from the other industries, especially IT giants, show how big companies firms moved away from working alone on their R&D and attract and absorb external sources of knowledge for innovation⁶³. Banks should direct to an open innovation business model, involving both internal and external participants to design, develop and provide new products, to acquire knowledge and new opportunities from external sources of knowledge.

Thus, I argue that the essence of openness holds a central role in opportunities for banks. To collaborate with FinTech and to use common complementary assets lead to mutual enhancement and synergy.

Open API technologies provide a tool for solving of this problem and change the way of interaction with customers by their communication channels, while changing approaches in work of bank's IT departments and entering new business products to the market. The technology does not require execution of long-term projects on new products launch and infrastructure transformation, but provides a flexible, interactive development tool⁶⁴.

In fact, API approach enables the bank to focus on things it can do best of all and to interact with other manufacturers for completion of the rest blocks. In my opinion, this is a very

⁶³ Brunswicker and Vanhaverbeke, 2015, pp.1242 - 1246

⁶⁴ Morabito, 2016, p.257

important thought. Earlier bank had to remake the whole technology to create a new product offer if the bank's work was inefficient. The use of API enables to develop new services from more effective third-party developers on the basis of available intellectual property which allows to save time, money, and adds new values to the company. In other words, the bank simply builds a platform and unites its business processes, services, products, content and data with partners, own teams or independent developers into uniform ecosystem in a simple and secure way. A hybrid bank model, platform for financial services rendering is formed. I consider this model as the most probable and promising development direction of the banking market.

The figure shows transformation of the current banking model into a new type - hybrid model.

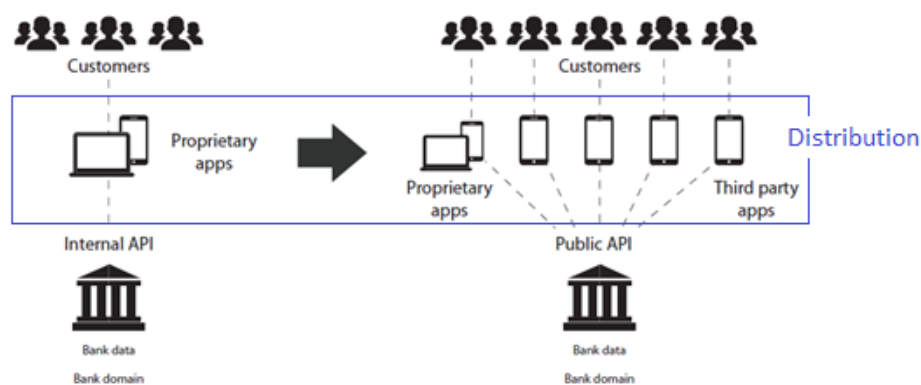


Figure 9: New bank's business model. Transformation process

In this model, the customers should not waste their time while searching for the most suitable solution and switching from one app to another one which renders the necessary financial services, or while trying to unite financial flows from different apps and offers. The customer gets access to a uniform platform and the bank offers a full range of services from one access point, irrespective of who the service provider is. The platform should unite traditional banking services (accounts, deposits, credits, card remittances, etc.) and new solutions (crowdfunding, crypto currencies, etc.) online. New FinTech solutions can be connected to the uniform platform and can provide services while using the uniform infrastructure. This enables any user (whether a bank or any other telecommunication company or FinTech company) to connect and to launch new financial services quickly from any corner of the

world, without investment of funds into very expensive and stiff bank's IT systems.

When choosing bank's development strategy and bank's transformation degree in a new open API paradigm it is necessary to consider bank's structure possible configurations types in more details, to estimate all pros and cons, and to choose the most suitable model for each case. Let's consider a quadrant of bank's possibilities in the new paradigm and give some short characteristics of four models and the role of bank and FinTech in each model. On figure 9 below presented these business models map where you it is possible to trace the process of transformation from the lower left quadrant to the upper right one.

These roles are based on two key questions: who is involved in new products and services development and who is the supplier/distributor of new products and services to new clients?

Thus, the whole scope of bank's works directed on meeting the regulatory requirements and performance of the Central Bank norms, drawing up of the necessary accounting documents, arrangement and solving of customer data security questions, performance of back office functions, and other similar works will not be considered, since we believe that bank is responsible for these questions in any model.

I. The first type is a closed model at which banks continue own development and independent delivery of products to the customers. It is the model of traditional Bank of old generation with all negative features described in the previous chapters. The bank should try to compete with a new phenomenon independently by meeting the new legislative requirements. In my opinion, such a scenario is unpromising and should be completely precluded for my bank, since, on the one hand, it leads to conflict with market regulators and, on the other hand - to service degradation, loss of competitive advantages and, as a result, to loss of business.

II. The second is product manufacturer model. In this model, the bank focuses on development of new products and services, but thus entrusts distribution of these products and services to third parties including FinTech companies. On the one hand, it reduces expenses and possibilities of banking services distribution to customers and acquisition of a new customer layer, on the other hand, it will lead to gradual disintermediation of banks from the customer, loss of brand and bank recognizability, because both manufacturer and distributor will want to supervise branding and relations with the customer. By the way,

PSD2 instruction pushes banks to “manufacturer” role in a set of functions (for example, payment initiation services or access to information on account). Banks act as manufacturer and cooperate with FinTech companies to maximize penetration to the market which is proved by growing number of cooperation. However, in my opinion, this is a temporary phenomenon connected with intermediate transformation and is not stable for a bank, since complete breakup of connection with the customer and gradual disclosing of data which are competitive advantage of any bank can result in bank's activity degradation up to performance of money keeper functions only (until blockchain and its digital currencies will not supersede modern money definitively) and cash and settlement service functions while carrying out infrastructural role. This scenario is certainly favourable for FinTech companies and leads to their prompt growth and development to IT giants in the financial sector. This variant is surely not the best choice for my bank.

III. The third model presupposes that the bank acts as service supplier. This model assumes that the bank refuses to develop new products and services and entrusts this work to third-party suppliers. The bank performs the distribution function only. Even if we suppose that this variant is possible, banks will inevitably face the conflict with "manufacturer" of products and services concerning branding and possession of intellectual property. But the work experience as IT head in a number of banks allows me to suppose this model is impossible in its clear condition. All above mentioned disadvantages of slow and complex IT landscape of the Bank, obligations to the regulator, and necessity of urgent intervention in IT systems do not allow to entrust the whole development to outsourcing. For implementation of this model the bank may consider a transfer if completion of isolated system which is not a core system of the bank, for example, Internet or mobile channels and services to the third party. But all products in large banks cannot be completely developed by the third party.

IV. The fourth and the last model is an open platform. Strictly speaking, in this model, the bank is neither manufacturer, nor consumer, but acts as a guide or intermediary between suppliers and distributors from the third-party companies. The Bank's task consists in organizing of platform, development of interfaces, and guarantee of transparent interaction between manufacturers and distributors, security, correctness of calculations and balance sheets of the Bank, according to regulator's requirements.

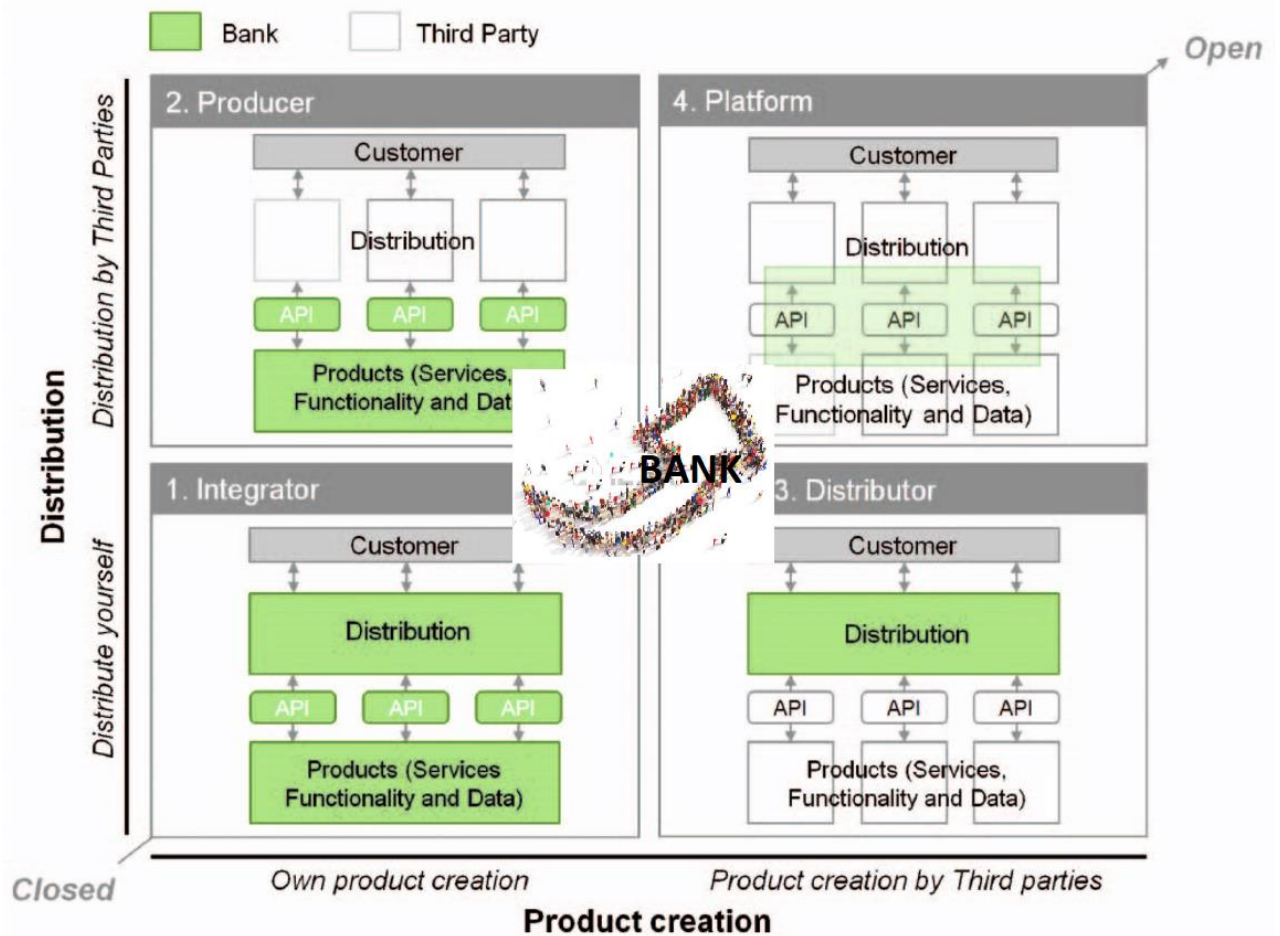


Figure 10: Business models' Map⁶⁵

The bank turns into commodities of the Internet, electricity, etc. and performs infrastructural role. In my opinion, state plays the key role in transformation of modern Banks into this model. If we abstract from Bank's interests, this model has essential advantages and prospects for banking services development, service quality improvement, growth of FinTech business and other business forms, and, finally, for national economies as a whole. If we consider this model from bank top manager's point of view, this model is not the best variant for the bank, as it reduces potential for bank development and profitability. The model of bank business degenerates, the bank becomes “raw materials donor” for third-party companies while transferring them the main links of value chain.

The conflict is obvious. Banks and the whole banking sector have received a signal to start

⁶⁵ Based on Euro Banking Association, 2016, p.21

global changes and they should find the ways to build into new trends of open economy. Transfer to open economy is inevitable. The question is how the bank can adapt to this new model.

In my opinion, the best choice for banks is a mixed model, i.e. integration of the best features of all four models, with particular accent on open platform, synergy with FinTech companies by cooperation and partnership. The optimal banking model is presented in figure №10.

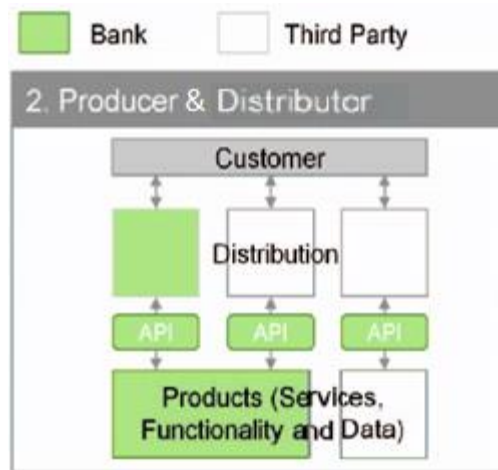


Figure 11: Bank in open API economy

Any bank has key competences and knowledge which give it competitive advantage in the market. In my case, for example, this is about million points of sales across all Russia created within several decades of work, distribution which cannot be reached by any FinTech company. On the contrary, distribution through mobile devices is poorly developed and requires attraction of more successful players. The same concerns internal development. There is a number of key competences in the bank which create and develop banking services and bring great profit. They need to be improved by involvement of valuable qualified resources, but they should remain bank intellectual property. In terms of payment services and payment ways, FinTech companies are ahead of the curve in this field and should be involved in development of these services.

These models have already started to appear, first of all, in Europe. One of bright examples is innovative Online Bank Fidor which offers a business model at which customers can use the best, cheapest and quickest banking services irrespective of their supplier on the same platform, in one click. Banks continue to sell services and rely on FinTech in all other

respects.

For example, the Fidor platform offers three different type of lending:

1. The first level consists in classical overdraft offered by Fidor which earns on it by paid interest;
2. The second level consists in crediting of each other, when Fidor regulates its customer; customers lend money to other Fidor users, agree on interest rates directly with them and pay Fidor the commission for service use;
3. The third level is integration of these platforms for crediting of each other. Platforms share customer, Fidor takes the commission for a direction of its customers to the other platform.

Thus, the basic idea is implemented. Own offers and offers of the third parties are created and distributed and the customer is not forced to buy a banking product without any alternatives. In this business model, banks offer new products from FinTech and get access to a new layer of potential customers which was inaccessible for them earlier; thus, these customers have not received banking services before. These customers were considered as either too risky or non-strategical, or the banks were not able to work with this group before.

4. Results

Nowadays new generation is already the biggest consumer group for banks and have one key feature - they want a near real time fulfillment services and information delivery. FinTech teach this demographic cohort to use a non-traditional modes of banking services, different peer-to-peer platforms, and alternative crowdfunding accelerators. The new generation grown up with social networks and modern mobile gadgets does not plan to visit boring bank branches, to learn a complex and tiresome description of banking product series, to connect to outdated mobile banking systems. The young generation does not like this. Young people got used to enjoy various online services since childhood. Today, a representative of the new generation lives and buys not only properties and real qualities of product or service, but what he or his peers think about it and what his inner calling (desire, attitude, intuition), prestige (social environment), emotional spirit tell him. The new consumer of banking services does not want to move in space unnecessarily. It is easier for him to perform any financial operation remotely, by clicking several keys on mobile device and to manage own finances easily, quickly, and cheaply.

And the most important fact is that this new generations does not see banks as part of their ecosystem and their lifestyles. They do not need the bank but felicitous banking services only. And this is really challenge for the banks and one more impact to be changed.

The challenge is aggravated by the fact that the majority of banks cannot quickly adapt to new conditions due to many restricting factors and limitations described above, including awkward bank's IT systems requiring enormous costs for maintenance of functions and security, their corporate culture and internal values which are not focused on a quick innovation. Usual transfer of the banking services to online mode does not work or works not in a way the customer wants to see it. Crypto currencies, various decentralized solutions, and payment services offered by companies of the new generation and promoted by giants of Internet industry are at banks heels.

On the other hand, new phenomenon has all the features inherent in the present time. It seems that if FinTech did not exist, someone would have thought it up! So, it is harmonic and timely appeared in the current financial ecosystem with it innovativeness, dynamics, agility, ease of use, satisfying the new customer's wishes. Despite of the fact that the sizes of FinTech

business are not comparable with banks yet, the rates of their growth surpass all expectations thanks to more favourable conditions for customers and, hence, much higher customers' loyalty that is why the loyalty rate of FinTech players exceeds the rate of traditional banks.

Certainly, these features have disruptive influence on banking business expanding the traditional industry's boundaries and extremely improve quality of banking services.

Many banks that have perceived pressure on their business from the FinTech companies are trying to renew their strategy and approaches to innovate. They are scared to lose out business in competitive struggle. Banks realize importance of customer service quality, introduce innovations within the scope of their business models and cooperate with new players. Contemporary banking transformation from a complex, bureaucratic, vertically oriented structure into a FinTech service constructed around purposes and tasks of the customer holding mobile device.

Banks need global changes in introduction practice of technical and product innovations to transform and to use advantages of new business models of FinTech companies. To introduce innovations as quickly as small start-ups do it, the banks should copy product development processes of start-ups. In other words, the banks should think and act as FinTech start-ups form own DNA of FinTech start-ups and Internet giants. Otherwise, banks with passive position will lose demand for them in the market and their share will be seized by stronger players of the market.

The bank enjoys reliable and good monetizable data, capability to consider and to predict risks, smoothly working information security service, long-term experience in attraction and servicing of customers, financial resources required for development, connections with the banking community, and vast experience to survive and develop in different conditions of the market. Application of a wide set of analytical tools for processing of big information arrays enables to detect upcoming trends and to draw unique conclusions which can be transformed into better, quicker, more reasonable business collusions, to develop cutting-edge products, to open hidden markets and to offer new innovative solutions to the customers for solving of their personal financial problems. Therefore, the banks should find the way how to apply their advantages and in conjunction with the new phenomenon, try to strengthen their positions and gain new points of growth. The most obvious step is to search

for companies with the most interesting for the bank technologies, with which the bank will conclude a partnership agreement or will buy out/absorb their technology together with development team.

To sum up my research, I concluded that strategically for our bank it is necessary to move in several directions:

- To evolve the new type of lending in attempt to bridle the new disruptive crowdfunding trend and at the same time attracting a new FinTech teams.

The bank is going to be first on the Russian market to occupy this niche, and this project seems to be quite promising. In conclusion, in appendix 3 delivered a SWAT analysis to systematize of all advantages and disadvantages of this project. Each pros and cons should be discussed on Board of Directors and finally making a decision to start.

- To investigate disruptive innovation blockchain technology, trying to implement useful project based on it and be ready to gain first benefits to use it.

The blockchain is the DNA of the new banking system and will change how we view banking forever⁶⁶. This technology brings an unprecedented level of security and transparency to banking services. Moreover, it's a cross-industry technology which is going to be implemented in different areas. On my opinion, it is necessary to realize how banking business and this technology can follow together, discover the technology potential, in order to make sure that, when this innovation will indeed come, our bank will be ready to change, adapt and adopt it quickly. And our business model and strategic outlook should evolve with this innovation.

Two months ago, our bank has been assigned to the implementation of a remote client identification system based on blockchain technology. At a pilot stage, it is supposed that the system of remote customer identification will use interoperability principle of bank consortium systems which are interested in creation of a new model for banking services distribution. This principle presupposes availability of products or systems with open interfaces at banks which provide interaction and functioning with the same technologies of

⁶⁶ Wunderlich, 2017, p.15

other banks without any restrictions. The developed solution is the first step for formation of the alternative decentralized system of interbank data exchange based on innovative technologies. This system will enjoy all advantages of blockchain technology: efficiency, transparency, fail-safety, and security. Application of the new technology will make banking services more transparent and will offer access to trading session for more users. The process to join into the blockchain consortium is represented in appendix 4.

The solution being developed is the first step towards the formation of an alternative decentralized system for interbank exchange of data, based on innovative technologies. Such a system will have all the advantages of new technology: efficiency, transparency, fault tolerance and security. The use of the new technology will make banking services more transparent and allow more users to access the trading on the exchange.

- Be more openness, transforming our business model towards open innovation and open API approach.

Banks should direct to an open innovation business model, involving and collaborate with internal and external participants to design, develop and provide new products, to acquire knowledge and new opportunities from external sources of knowledge. It is vital to implement open API approach in our bank through a thoughtful API program and outline the steps to a hybrid bank model, the most probable and promising development direction of the banking market. It could help the bank to focus on things it can do best of all and to collaborate with other developers for the rest blocks.

Banks necessary to look at business processes from a “customer” point of view and streamline them for digital journey, accumulation API services into own repository and restructuring set of single business processes in alternative transparent manner. In this repository accumulate not only internal APIs but also third parties’ ones, the wide set of APIs available today for subscription from FinTech that are focused on solving appropriate business issues.

For API program, it needs the support and commitment of the relevant business stakeholder, including technology experts in boardroom, and the most successful initiatives could be performed with CEO maintenance in long-term perspective. This could direct executives to rethink their operational business models, and renovate their internal business processes and

restructured business units. This program should change internal culture and inspire company innovation policy, involve new partners and attract talent in the new ecosystem.

Some of key points which should be considered to design API program:

- API program should focus on users experience and design API more flexible and valuable for their FinTech applications.
- The API program design should be rather pragmatic. Bank need not to develop API by way of API. The common rule for bankers is to only develop APIs that will achieved consumer wishes and business potential, otherwise to be more effective.
- As API is a door into bank's databases and core programs, it's essential for bank to manage risk deal with fraud monitoring and with security. The API program should ensure security details;
- Bank should evaluate how to better develop API: using own platform or third parties' already established platform. It could save bank's resources and diminish complexity.
- API strategy should have clear purpose and measurable outcome, such as expand customer's base or loyalty, and bank should select rationally their partners and governance them.

It is time to radically transform bank's business model and their executive's worldview to switch to a new business model, based on openness and digital transformation approach that will give banks access to FinTech's innovative solutions, gain better online experiences, be chipper, agile and client centric, creating new forms of value.

5. Conclusion. Future prospects

My research hypothesis confirmed. I am convinced that banks will not disappear but under the influence of the FinTech and digital revolution will inevitably change. Traditional banks will be replaced by banks of a new generation with DNA of FinTech. And in the competitive struggle between banks and FinTech companies will win a partnership.

I stake on mutually advantageous collaboration. FinTech are too seasonable and all-around not to evolve, the banks are too established and big to fall. Collaboration of banks and FinTech has huge potential which will define development direction of the banking sector for the next few years.

Several years ago, companies from other branches have made the same way of evolutionary development. For example, pharmaceutical giants have opposed to the advanced biotechnological companies by partnership and purchase of these companies.

This approach is quite fruitful for the banks and FinTech companies, but this way will not eliminate bank's internal barriers to innovative process, radically, but can help executives to understand the culture change better. Our research clearly indicated that this is the final call for banking leaders to examine the opportunities arising out of the combination of three elements: digital penetration, FinTech potential and extremely upping value of an open innovation, and to intend the jump to the new business paradigm. Transformation from a traditional organization focused on products, hierarchical and bureaucratic structures, siloed operations and focusing on customers' feedback to a company that follows the principles of flexibility, openness, and customer focus, increasing their trust and loyalty⁶⁷.

In case the approach to transform will not undergo any changes, these banks will continue to yield to FinTech by giving them its share and will become commodities.

In my opinion, over the next few years trend is directed on the creation of banks of the new generation, FinTech banks. These are digital banks without any physically existing branches, where transactions are carried out through websites and mobile apps. This modular and flex

⁶⁷ Fasnacht, 2009

bank in the mobile customer's gadget operating as a platform with any kind of digital banking services. This new bank generation based on the following elements:

- bank license, for support of independence from the other banks, and ability to perform all transactions with customer's money without restrictions. As a rule, these companies are founded under the licence of a partner-bank or a large bank which decided to change the development model in accordance with a new trend;
- basic bank platform is constructed from scratch; it is multifunctional, flexible, scalable, inexpensive in service, with own CRM system and real-time customer service;
- easy and flexible infrastructure of customer identification. Following the results of the research this identification should be carried out using blockchain technology based on customer's biometric identification by face or fingerprints. This technology will allow the customer, who already once registered himself, to use all platform's banking services without additional registrations;
- interactive and flex API function for connection with third-part developers according to mixed Open API model described in the third chapter. This is a model of cooperation, based on synergy of the strongest aspects of the bank and FinTech that meets the requirements of the new trends in economy, openness and client centric approach.

Experience of disclosing and rendering of well-structured and secure interfaces is not a new approach in technological sector. It is widely applied by technological giants, such as Google or Apple which have allowed third-party companies to work with innovations. This approach has made these companies stronger and more powerful, despite the fact that innovations arrive from the third-party companies.

Banks should act the same and should offer well-structured and secure interfaces of applied programs for providing to data to FinTech companies on a selective basis. With this approach the third-party companies will be able to work on innovations in the field of financial services and will allow the banks to support their key business directions. This new approach not only has a huge potential for generating of new profit streams, but which is even more important, enables the banks to implement significant innovations in their field.

FinTech bank's business model will consist in acquisition of income from the banking services of own development and from commission incomes of the third parties which have

got an access to the bank's platform. The bank creates an ecosystem, in which the most successful and interesting market players become customers of the bank and attract new customers by their presence. The traditional bank may even redirect its customers for service at FinTech bank's ecosystem and pays commission to him for it. Grace of this model consists in the fact that new form of bank competes to traditional banks on the main banking services and does not create its own service range, but additionally uses the best solutions of FinTech as financial services supplier. Thus, the range of services can be infinite and can include allied industries, for example, insurance business or can expand the service range based on new technologies including blockchain.

To attract new FinTech companies bank arranges various competitions, lighting tournaments, and acceleration programs on their platform. Involvement of successful FinTech companies helps FinTech bank to increase the scope of customers' database and to cover areas which have not received timely service before: local zones with no banks due to high risk or low marginality, youth or small-scale business.

Our bank will governance to "catch the wave" of FinTech, balance its destructive effect on the banking sector, and use its powerful innovative potential for formation a new banking ecosystem with client centric banking services. The regulatory support will be extremely important, and new rules have to push players to disclosure their potential.

And now, last but not least, it is necessary for bankers to monitor carefully the evolution of the new disruptive technologies that can not only change the quality of banking services, but also have the potential to change the existing financial system and monetary turnover. There are many examples of incorrect forecast about many technologies but the point is to analyze them⁶⁸ and study them before doing anything with them. The bank should take a proactive position, to keep its eye on the ball, experimenting with the FinTech for quick adaptation in the future.

⁶⁸ Morabito, 2016

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Appendixes

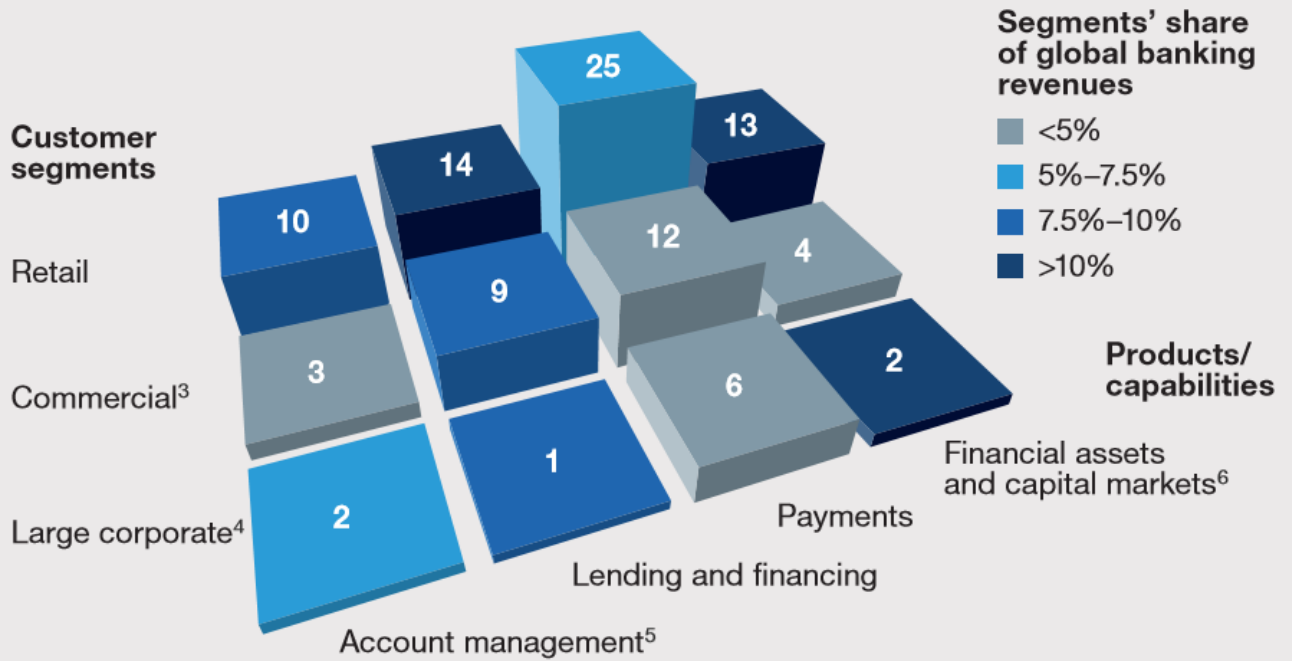
Appendix 1: Transformation to the digital company

Culture attributes	Legacy DNA	Digital DNA
Adaptability to change	Slow, but innovating <ul style="list-style-type: none"> • Resistance to fail • Focus on innovation • Late adopters of technology change 	Agility <ul style="list-style-type: none"> • Iterative • Constant disruption • Continuously innovating • Fail early, fail fast, learn faster • Fluidity • Uneven velocity between digital and businesses • Changing nature and topology of work • Continuous ecosystem disruption
Work style	Siloed <ul style="list-style-type: none"> • Fixed team structures • Siloed operations • Well-defined roles and skill requirements • Geography dependent 	Collaboration <ul style="list-style-type: none"> • Morphing team structure • Democratizing information • Dynamic skill requirement • Intentionally collaborative • Geography agnostic
Organizational structure	Hierarchical <ul style="list-style-type: none"> • Long-standing levels of hierarchy • Decision making driven by positional authority, and not skills and proficiency 	Distributed <ul style="list-style-type: none"> • Flattening and changing hierarchy • Ongoing shifts in decision rights and power • Changing mix of traditional and nontraditional stakeholders
Risk appetite	Cautious <ul style="list-style-type: none"> • Regulatory-determined risk appetite • Siloed operations separating more risky and less risky businesses 	Exploratory <ul style="list-style-type: none"> • Modulating risk and security boundaries
Customer experience	Customer focus <ul style="list-style-type: none"> • Use of analytics to anticipate customer needs • Focus on the feedback loop to hear customer voices • Latency in customer feedback and firms' response 	Customer centricity <ul style="list-style-type: none"> • Real time and on demand • Increased customer involvement

Source: Deloitte Digital and Deloitte Center for Financial Services analysis.

Appendix 2: FinTech's share of global banking profit

Customer segments and products of leading financial-technology companies,¹ 2015, % of total²



¹350+ commercially most well-known cases registered in the Panorama database; may not be fully representative.

²Figures may not sum to 100%, because of rounding.

³Includes small and medium-size enterprises.

⁴Includes large corporates, public entities, and nonbanking financial institutions.

⁵Revenue share includes current/checking-account deposit revenue.

⁶Includes sales and trading, securities services, retail investment, noncurrent-account deposits, and asset management factory.

Source: Analysis of data provided by McKinsey Panorama (a McKinsey Solution)

McKinsey&Company

Appendix 3: SWOT analysis of the new lending approach

<p><u>STRENGTHS</u></p> <ul style="list-style-type: none"> • Because the platform will be based on the resources of one of the largest banks in Russia, our project has several benefits: • Contemporary IT tools and infrastructure which will ease IT development and minimize costs; • strong position in the market and high credibility to the project which also will help to lessen costs on marketing promotion (e.g. no TV advertising would be needed) • existing SMEs customer base and a plenty of potential PI investors that could be used as the first pull of clients; 	<p><u>WEAKNESSES</u></p> <ul style="list-style-type: none"> • Currently no existing and viable scoring model for evaluation of risk level and potential of the project that is up for investment; • Requires serious adjustments in the Bank infrastructure and some relocation of human resources to manage and support the project; • No complementary assets and low barriers to enter to this niche market by other banks in case the innovation will be successful; • Could require strong legal support as this P2B market niche is lacking clear regulation from the Government side;
<p><u>OPPORTUNITIES</u></p> <ul style="list-style-type: none"> • Niche market segment with a high potential; • Very low competition in Russia in this segment at the moment; • Extreme deficit of borrowing sources for SMEs and start-ups which will push them to the platform; • Popularization of the bank as an innovative company acquiring new customers to classical business; • Empowerment in developing new products and services on the platform; • Future expansion to the other countries; • Great opportunity to attract promising FinTech companies. 	<p><u>THREATS</u></p> <ul style="list-style-type: none"> • There are still too small number of SMEs in Russia; • Unclear government regulations regarding P2B segment; • Vulnerable economic situation in Russia is negatively affecting SME defaults; • Negative reputational consequences in case of too many SMEs defaults; • Strong competition from global industry leaders and low interest environment in Europe fogs market expansion; • Low level of financial literacy of the population, a low proportion of the middle class in Russia.

Appendix 4: The process to join into the blockchain consortium

