



Banking Business Innovations: Conceptual Foundations of Modern Economy Development

Igor Yeremenko¹, Elena Rudskaya^{2*}

¹Department of Economics, Don State Technical University, Russia, ²Department of Economics, Don State Technical University, Russia. *Email: alencaru09@gmail.com

ABSTRACT

The objective of the paper is to give scientific grounds for theoretical and methodological provisions of the digital banking concept as the most important trend of banking innovations. During the research, the general scientific cognition methods were used: Analysis, generalization, modeling, abstraction, logical method as well as the systemic, institutional and evolutionary approaches. As a result of the study, the most important innovation processes in the sphere of banking service were revealed that reflect the innovative nature of development of the modern economy. The concluding stage is providing grounds for suggestions in forming the ecosystem of mobile payments for a commercial bank.

Keywords: Innovation Economy, Banking Innovations, Digital Banking Platform, Mobile Banking, Omni-channel

JEL Classification: G2

1. INTRODUCTION

The relevance of the research topic is conditioned by the fact that the economy can only develop on the basis of innovations, scientific and technical advance. One of the modern trends of banking innovations is forming and developing the digital banking, including the mobile banking and mobile payments system. It should also be noted that innovations in this sphere are rather novel for the Russian banks. A vast customer base of the banks becomes an “innovation platform” for elaborating and implementing smart technologies in managing the customer experience.

Innovation strategies of development of banks ensure an actual competitive advantage exclusively on the basis of “individualizing” the communication with customers. This approach is brought into life at the expense of the fast penetration of mobile technologies. So standard banking products now have to be distinguished by the maximum simplicity of accessing and using, evoking a wish to always “have a bank about.”

The modern vector of development of the banking sphere has determine the way of mutual integration of financial and non-

financial virtual services expanding the boundaries of the sphere at the expense of various software products and developers thereof. What is observed is already not the “evolution” but a “revolution” of the content: For users, it does not matter how a banking operation is performed - the most important is that it is performed quickly and from their own devices, with minimum time and means spent. Mobile communications providers, retailers, state authorities have to migrate to the uniform standards of virtual customer servicing, as any processes they deal with are associated with movement of funds, payment for goods and services, taxes and dues.

2. REVIEW OF LITERATURE

The theoretical and methodological provisions of banking sphere development under the innovation economy are being worked out both in Russia and in other countries rather actively.

For the purposes of this research, the works of the Russian authors and practical experts most known in the area were studied: Lavrushin (2011), Gershman (2010), Surin and Molchanova (2008), Myakishev (2011), Novoselova (2006), Kochetkova (2015), Mehtiyev (2015).

Alongside with these, the materials of foreign analytical agencies and companies were used, including the papers by Gemalto (2015), Markswobb Rank and Report (2015), KPMG (2012) as well as foreign researchers - Schumpeter (2007), Johansson (2008), Leinonen et al. (2012), and Jim Marous (2015).

Innovations act as a basis for existence, development and competitiveness of national economies. Only the high technologies are a tool of competitive economic struggle. One has to agree with the idea of Bell (1973), the founder of post-industrial society theory, about the smart technologies becoming as important as the machine ones two centuries ago.

Knowledge is represented by structured information recognized by social subjects and the society as a whole. Gershman (2010) is quite right in maintaining that the innovation economy or knowledge economy is an economy of the society based on knowledge, innovations, welcoming perception of new ideas, readiness to practically implement them in various spheres of human activity.

It was Johansson (2008) who noted that the rise of today's economy was influenced by three major factors: Increased migration on a worldwide scale, fast information exchange (computer capacities double every 18 months commencing with the invention of a microchip), and convergence of sciences.

For the first time, the notion "innovation" was mentioned by the Austrian scholar Joseph Schumpeter (2007) who worded the most important parameters of innovations:

- The use of new equipment, technological processes or market support of production (buying and selling);
- Implementation of products having new properties;
- The use of new raw materials;
- Change in organization of production and procurement for that;
- Emergence of new sales markets.

Schumpeter (2007) identified the novelties with "bringing into life the new combinations" - any novelty is a unique sampling of already available knowledge and other resources.

The authors agree with the statement that innovation is a final result of creative activity which sums up as a new or upgraded product or technology that are applicable practically and able to satisfy certain needs.

In other words, innovation is a result of implementation of new ideas and knowledge for the purpose of their practical use for satisfaction of certain demands of consumers.

Let us describe the classification of innovations in brief. The following criteria have to be mentioned as the main ones according to which the types of innovations are singled out (Surin and Molchanova, 2008):

- The extent of novelty, radical character of the innovation;
- The nature of practical activity where the innovation is used;
- Technological parameters of the innovation.

According to the extent of novelty and radical character, such main innovation types as basic and improving ones can be singled out. According to the nature of practical activity where the innovation is used, the main types of innovations are production and managerial ones. Product and process-related types are subdivided according to the main technological parameters of innovations.

A special place in the classification is occupied by the strategy innovations. Unlike the process innovation, which consumers do not see for the most part, the strategy innovation directly touches on them? The strategy innovation implies creation of a value for the consumers in order to satisfy newly arising needs of the customers, increase the value of products, form new markets and new groups of consumers for the company (Gershman, 2010). Its result is the way the company changes the target groups of consumers, the way it goes out to the market, brings its products or services to the end user (the opportunity to buy products in this chain round-the-clock, direct sales to end users, creation of a feeling that it is in this retail chain that buying common goods is a bargain, forming of new trade virtual platforms).

The review of literature on the question of classification of innovations has shown that it is strategy innovation that conditions forming the new type of behavior in market relationships participants while also pushing not just satisfaction of customers' needs but creation of a unique customers' ecosystem to the foreground.

3. RESEARCH METHODS

The objective of the study is providing the theoretical and methodological grounds for the conceptual foundations of digital banking. In order to achieve the said objective, the following tasks have been solved: To make the content of notions "banking innovation" and "new banking product" more precise; to determine the influence of the level of development of information technologies on the innovation activity of banks; and to provide grounds for the structure and composition of participants of the digital ecosystem of a bank as an innovation tool for managing its relationships with customers. The object of the research is innovation processes in the sphere of banking service. The subject of the study is the activity of commercial banks in construction of a mobile payments ecosystem from the standpoint of economic efficiency. Using the institutional and evolutionary, systemic approaches, the essence of innovation economy and innovations categories have been explored and classification of innovations has been studied.

The innovation processes in business have been generalized and particularities of innovations in the banking sphere have been revealed. The banking innovations market has been analyzed and the dependence of development of this market on the level of technological development of the banks has been identified, with digital bank models studied as an innovation unit. Suggestions on forming a mobile payments ecosystem for a commercial bank have been elaborated and substantiated.

4. RESULTS AND DISCUSSION

4.1. Banking Business Innovations

First, non-identity of the notions “new banking products” and “banking innovations” has to be explained in brief. As it was noted above, the innovations can act both as a result and a process.

As the authors believe, the most profound research of the question was conducted by Lavrushin (2011) who understands banking innovation as a total of crucially new banking products and services - this is a synthetic notion about the objective and the result of activity of the bank in the sphere of new technologies aimed at obtaining subsidiary earnings during creation of favorable conditions for forming and placing the resource capacity with the help of implementation of novelties helping the customers get profits. The author singles out technological and product banking innovations. In the first case, these are electronic transfers of funds, bank cards, in the second - new banking products. The market needs are expressed in creation of a new banking product being a combined or non-traditional form of banking service.

Myakishev (2011) systematizes the terminology in the area of banking innovations as follows:

- The notion of a “new product” in banking activity can be used both for determining the improvement and update of the existing products and for the products offered to the consumers for the first time in order to optimize the satisfaction of needs, which in its turn can generate new customer’s needs;
- A new banking product is a banking service offered in the market for the first time or which is new for the bank in being offered to its customers. The modification of the “existing

product in relation to the technology of presentation or other parameters to be considered significant by the consumers for themselves that will be able to lead to possible sales to new types of customers” also belongs here;

- The following compulsory parameters of a new banking product have been identified: “Conformity to the current and potential demands of consumers; ensuring of subsidiary earnings for the bank; higher qualitative parameters of the product in the market as compared to similar products; conformity of the product to the bank’s development strategy.”

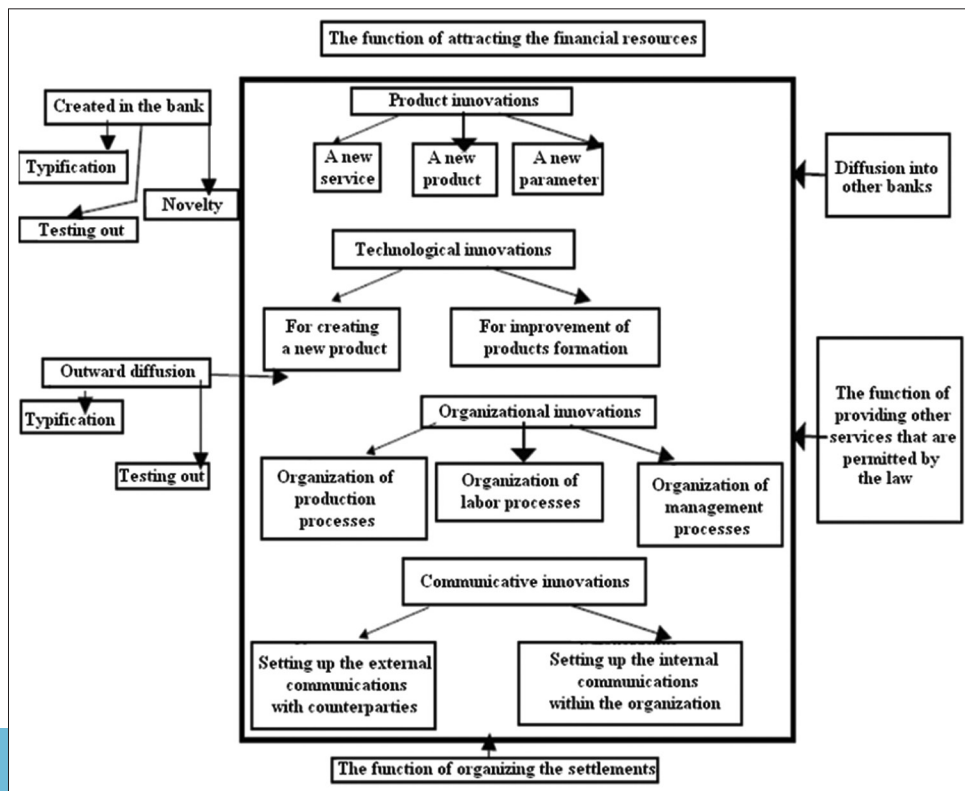
Novoselova suggests an interesting classification of banking innovations. She explains the expansion of customer’s base by product, technological and organizational innovations ensuring the connection of the bank with the customers (Novoselova, 2006). Accumulation of the consumer choice is supported and consolidated by communicative innovations (Figure 1).

Public welfare is determined not by the mass of production factors and not by the investments volume but by efficiency of innovation activity ultimately yielding a positive result.

4.2. The Influence of the Level of Development of Information Technologies in the Banking Sphere on the Innovation Activity of Banks

The International Monetary Fund has reduced the forecast growth of the world’s GDP as low as to 3.1% in 2015 and to 3.6% in 2016. The deep recession will keep on in the developing countries whose economy depends on the growth of prices for oil and raw material products, Russia included (Kochetkova, 2015).

Figure 1: Classification of banking innovations (Novoselova, 2006)



Consequently, the financial industry experiences problems too; hence the rates of IT penetration into it are decreased. According to Gartner, in 2016 the global expenses for IT at banks will go down by 2.4%. As for the banking IT penetration market, the downfall will reach over 20% (Kochetkova, 2015).

However, according to the results of the research by Source Media, the US analytical company, which conducted a questionnaire survey of technical directors of fifty banks of various activity scale, it is a slightly different situation that is observed. First of all, banks are planning to spend the IT-budgets for ensuring the security, data analysis and mobile banking systems. About half of those questioned are also going to invest into online banking, solutions for bring your own device managing and payment systems. It was only two categories that merited straightforward financing cutback - the desktop personal computers (PCs) and project management technologies. Gartner forecasts doubling the IT-budgets of banks that focus their intellectual and financial resources on working with big data, analytical systems for risks management and deep segmentation of customers (Kochetkova, 2015) by 2019.

Let us consider the situation in the Russian banking sector. According to the most optimistic estimates, the IT budgets of the Russian banks were reduced by over 20% in 2015. Although the Russian banks made almost no cuts on the IT expenses in the national currency, the ruble weakening anyway resulted in the considerable reduction of budgets in dollar terms.

Despite the crisis, banks go on mastering new channels and technologies. The financial institutions are ambitious to save means and keep the customers. The competition is high: So many as over 700 banks are still active in Russia. Hence there is as high a demand for IT-solutions: Mobile and online banking, marketing systems for working with customers, technologies associated with big data and cloud solutions (Table 1).

Under the slump of the population's income, banks have made the competitive struggle for customers more severe. Their priorities towards the products implemented have changed accordingly, too. While in 2013-2014 the banks needed development and upgrade of credit conveyors, automation of the expanding network of branches, sales outlets and automated teller machines, nowadays the first order tasks include promotion and offer of debit products and solutions which increase transaction commission charges (Table 2).

The interest of banks in development of partner programs is growing, which forms the demand for integration projects, implementation of solutions for cross sales, including the loyalty systems. Technologies that allow reducing the operation costs and increasing the efficiency of working with customers are on trend (Table 3).

The Russian banks also stress the security, customer relationship management, Business intelligence and analytics, automated preparation of managerial reports, management of business processes and data storages. The main thrust will be made on the development of mobile banking applications for retail

and corporate segments, traditional Internet banking and risks management systems.

4.3. Forming a Digital Banking Platform as the Main Trend of Development of the Modern Economy

The ongoing development of technologies puts the customers further and further away from bank branches, with a bank turning into an interface in various gadgets and banks having no offices emerging. Banks compete for their customers getting one and the same communication experience and result in all communication channels.

Thus, the omni-channel generates a uniform interface. Given a uniform interface, it probably is able to exist without a uniform bank too, i.e., to be a uniform access point for consuming the services of many banks. So an actual threat to the existence of banks is not the economic complications but a financial supermarket in a smartphone built using the state-of-the-art technologies.

From such an aggregator, customers demand the access to (Mehtiyev, 2015):

- The mobile wallet by which one can make and receive payments;
- The marketplace/peer-to-peer platforms on which one can borrow money;
- Banks where one can place extra funds (if one has got more funds than the amount of state insurance, the platform will automatically place them into several banks that have the highest rates);
- Investment robotic consultants which will help one control the personal finance regardless of their "distribution" in a large quantity of financial services providers.

Proceeding from the conditions described, the Association of the Russian banks suggests two scenarios of banking sphere development. The first one is digital bank. Products of such a bank have to be as little functional as possible; otherwise they will never pay back. These banks themselves have to be aggregators of various services and hence to use accesses to other platforms via application program interface-interfaces but not to build an expensive uniform ABS.

Given their minimum functionality, the products have to be personified, so such banks will use the data from clouds and social networks.

The second scenario is a bank operating for other banks or bank-to-bank. The providers' products have to be easily constructed and reassembled. To ensure the easiness of use and access, their processes have to be standard and their activity-easily scalable.

The global character of the new digitalization trend is confirmed by IBM research. In the company report, digital banking is subdivided into four models (Marous, 2015):

- A digital banking brand. Such banks launch new brands with unique offers and products created especially for the younger generation; as a rule, the brands use the banking infrastructure

Table 1: The largest IT projects of Russian banks in 2015 (Kochetkova, 2015)

Bank	Contractor	Brief description of projects
VTB24	n/a	Replacement of the basic IT platform "Biscuit" with Oracle solutions pool: The Oracle Siebel united frontal solution, Oracle Fusion Middleware integration bus, Oracle master data management customers catalog
VTB24	Info systems Jet	Putting into operation http://www.cnews.ru/news/line/vtb24_s_pomoshchyu_infosistemy_dzhet of the fourth DPC - 1, 6 MWt power, 90 high-load racks capacity. The reliability level of the new data center is up to Tier III
VTB24	GlowByte Consulting	Creation of a united http://www.cnews.ru/news/top/2015-09-25_vtb24_zavershil_odin_iz_krupnejshih_bankovskih data storage of hundreds of terabytes (current capacity is 130 TB) based on Teradata Enterprise DWH Platform solution and the subsequent upgrade of corporate managerial reports systems
VTB24	n/a	Implementation of currency control documents processing and storage systems based on Syntellect and Abbyy solutions. On average, per day the solution processes 7500 documents. As the bank estimates, the financial savings due to the system implemented reaches 4 mln USD per year
Delta credit	Navicon	Implementation of microsoft dynamics CRM http://www.cnews.ru/news/line/v_banke_deltakredit_vnedren_microsoft at the bank's real estate mortgage centers located in 13 regions of the country
Credit Europe Bank	Belmont	Implementation of http://www.cnews.ru/news/line/2015-09-07_belmont_realizovala_vozmozhnost_predskazatel'nogo the forecasting communication with customers in the system of IVR of the bank based on Genesys Voice Platform
Leto Bank	Cinimex	Implementation of the united integration platform based on IBM Integration Bus 9 solution
Leto Bank	Vision Labs	Implementation of the biometrical face recognition technology based on Luna solution for countering fraud at customer centers, sales outlets and 30,000 bank's partner shops
Moscow Credit Bank	Compass plus	Implementation of an integrated solution http://www.cnews.ru/news/line/2015-10-02_moskovskij_kreditnyj_bank_vnedril_kompleksnoe for fraud management based on TranzWare Fraud Analyzer, integration thereof with the external processing system
Otkrytie	Bank "Otkrytie," IBS Platformix	Optimization of the system http://www.cnews.ru/articles/2015-09-18_bekap_kak_servis_bank_otkrytie_vnedril_edinuyu_sistemu_rezervnogo data copying based on EMC Networker and EMC Data Domain solutions
Sberbank	n/a	Consolidation of over 15,000 IT systems of all territorial banks. NPV of the consolidation program is about 8 billion rubles
Sberbank	Informzashchita	Organization of the united http://www.cnews.ru/news/line/informzashchita_razvernula_v_sberbanke traffic monitoring center based on Gigamon Visability Fabric solution for aggregating, filtering and replicating the traffic copy streams in the network
North-Western bank of Sberbank	Sberbank	Launching of the first of two electronic services centers for the corporate customers based on Sberbank business development center
Tinkoff Bank	Wincor Nixdorf	Implementation of the system for simultaneous http://www.cnews.ru/news/line/tinkoff_bank_ispolzuet_sistemu online detection of fraudulent actions in emission and acquiring channels, e-wallets and online banking system based on Iris solution
Unicredit Bank	Infosystems Jet	Automation of processes http://www.cnews.ru/news/line/yunikredit_bank_vmeste_s_infosistemami of individuals and SMB creditability analysis. CRM integration with scoring system and 20 external sources has been completed, checks in the external and internal databases have been automated

CRM: Customer relationship management, IVR: Interactive voice response

already formed (FRANK by OCBC bank, Singapore; LKXA by CaixaBank, Spain);

- A bank having digital channels. Unlike the banks created in the previous model, the banks of B model create an organization aimed at improving the user experience and resell the products of the bank via a more comfortable user interface (Moven, USA; Rocketbank, Russia);
- A digital bank branch. This model combines two approaches: The digital user experience and new business processes. It is a practically separate organization having a more flexible and modular back end that allows ensuring the best customer experience (Hello Bank by BNP Paribas; Tochka by Otkrytie);
- A completely digital bank. Such banks build their entire products supply on the digital technologies (Fidor Bank, Tinkoff Bank).

As IBM experts believe, in order to design a digital bank one needs to optimize the interaction, products, processes and organizational culture (Marous, 2015).

4.4. Conceptual Bases of Innovation Development for a Commercial Bank

The analysis conducted has demonstrated that the main development trend of innovations in the banking business is mobile solutions, migration of banks onto technological platforms for optimizing the investment expenses in the innovation activity.

The difference between the notions of mobile banking and mobile payments is explained in brief below (Leinonen et al., 2012).

1. Mobile banking is controlling a banking account using a mobile phone as an identity of the banking account owner.

Table 2: Innovation projects of Russian banks in development of mobile and internet banking in 2015 (Kochetkova, 2015)

Bank	Project description
Alpha-Bank	Putting into operation of the pilot traffic penalty payment service for X5 Retail Group. The service is rolled out on other companies who have an own motor vehicle fleet Putting into operation the online service for visa procurement via the Internet bank in over 30 countries of the world. The service is implemented jointly with VisaToHome company Implementation of USB-keys cryptography for authorizing and signing the e-documents in Alpha-Business Online Internet bank. This opens up further opportunities for smaller and medium scale businesses - users of Alpha-Business Online - who number 160 thousands already
Bank of Innovations and Development	Implementation of PayControl system (developed by Safe Tech company) for protecting the payments of private customers in the Internet banking system, which has allowed discontinuing the use of passwords sent by SMS. For identification, users have to point their smartphone camera at the QR-code in the Internet banking system, make sure the payment data in the phone screen are correct and press confirmation button. After this the software generates the operation code attached to its banking details
Bank of Moscow	Putting into operation of the e-document flow system for legal entities BM. doc. The system offers the following opportunities: Exchange of e-documents with counterparties using the electronic signature; storage and processing of documents, including signing and accepting; integration with the Internet banking; the use of a single keys carrier (USB-token) for the Internet banking; integration with 1C: Accounting system; preparation of e-documents for the subsequent submitting as requested by the tax authorities
Moscow Credit Bank	Putting into operation of the service "Personal account for currency control" for FEA customers The service will enhance the convenience of communication between the customers and the bank on contracts (loan agreements) the operations on which may be handled with the transaction passport drawn up, increase the speed of informing the customers about the current mutual settlements condition and accelerate the document flow
Raffaisen Bank	Access to the mobile bank for iOS with a fingerprint using the Touch ID technology
Sberbank	Launching of the world's first banking application with an integrated antivirus software (developed by Kaspersky Laboratory)
Tinkoff bank	Putting into operation of the MoneyTalk mobile messenger having the money transfer function. The service has been launched within the bank's strategy of developing the monoapplications that are available not only to customers of the bank
Troika-D bank	Implementation of a fully functional mobile bank "Mobile office" for the legal entities. The service allows viewing the information on accounts, forming excerpts on accounts, sending payment orders, authorizing the formed payment orders as well as revoking the payment orders

Table 3: Examples of projects to optimize ATM networks, 2015 (Kochetkova, 2015)

Banks participants of the ATM network	The scale of network and description of the service
Alpha-Bank, Gazprombank	6700 machines in 760 urban and other settlements of Russia. The opportunity of withdrawing cash and checking the account balance without further commission charges has been implemented
Vozrozhdenie, Promsvyazbank; Avtovazbank and Pervobank - since 01.11.2015	370 cities and towns of Russia. The opportunity of withdrawing cash without further commission charges in the network ATMs has been implemented
MDM Bank, Binbank	The opportunity of withdrawing cash at the "home" limits and rates without further commission charges has been implemented as well as getting the information about balance
Setelem Bank	Automated control of the partner network based on Oracle Siebel CRM

ATM: Automated teller machines, CRM: Customer relationship management

When performing payment transactions, the funds available on the banking account are used.

With regard to this, the range of services available to the user is rather broad - standard banking operations with the account, payment of services on an ongoing basis (housing services and utilities, communication, television), one-time payments for goods and services. The simplest kind of mobile banking service is notifying the users by means of SMS about the current operations on their banking accounts (the condition of account or credit, withdrawal of cash from the account, operations on fixed deposits).

2. Mobile payments involve making payments using the mobile phone, with the payer's funds placed in an electronic prepaid banking product ("mobile wallet") being used.

Meanwhile, the payer previously transfers the funds to a so-called mobile wallet from his personal account at the mobile communications provider by performing operations (implicative actions) with the payer's mobile phone. Mobile payments are accessible to those mobile communication subscribers who have no own banking account or do not want to use it when using the mobile commerce services. As a rule such payments are made for one-time purchases of insignificant amounts, i.e., micropayments, as well as for paying for services on an ongoing basis (housing services and utilities, communication, television).

Mobile banking was created as a continuation of the Internet services for desktop PC or laptops, with the solutions generally

working on one and the same platform of remote banking service. However, as the mobile technologies developed, it was increasingly understood that tablet PCs and smartphones were a separate direction requiring an individual approach. It was not only about adapting the interfaces for a smaller screen but also about creating radically new services geared up for mobile devices.

Let us now give grounds for the concept of forming the digital payments ecosystem for the bank under study. The authors use the data of Gemalto company that is the leader of the market of digital and mobile payments solutions and its mobile payment platform is a digital commercial infrastructure which is configurable by banks and payment services providers up to their needs.

The main methods of online digital payments using a PC and Web browser became universally accepted within two decades after implementation of secure connections protocols for protecting the information during transfer of payment cards data and after the trade via the Internet came into being (e.g., Amazon and eBay).

The online digital payment methods known today coexist with the payment methods used in the “actual” physical world - in particular, with paying for goods in shops using EMV cards (both swipe and proximity ones), but meanwhile mobile phones and even electronic devices carried around as accessories are increasingly used (Gemalto, 2015).

The environment is getting more and more complicated due to higher fragmentation of the market, as yet newer enterprises emerge in various sectors, from the traditional payments market players to new innovation companies using the digital technologies. This is accompanied by broadening the range of channels and numerous protection infrastructures. So obtaining a clear idea about the digital payments market may prove to be a difficult task.

Now the potential participants of the suggested ecosystems should be determined. The number of potential persons concerned with the digital payments ecosystem includes (Gemalto, 2015) the following:

1. End consumers;
2. Traditional players of the market associated with payments:
 - Financial institutions/banks;
 - Payment brands (for example, Visa, MasterCard, American Express);
 - Retail trade enterprises;
 - Local systems (e.g., Cartes Bancaires);
 - EMV compatible payment systems (such as ELO);
 - Processing centers (e.g., First Data);
3. Developing innovation companies in the sphere of digital payments:
 - The leading companies in the sphere of direct content provision (for instance, Google, Facebook);
 - Mobile telephone networks operators (e.g., Orange, AT and T, Verizon);
 - Developers of mobile services/solutions (Square, iZettle etc.);
 - Manufacturers of mobile devices (e.g., Samsung, Apple, HTC).

Next, the main commercial models of digital payments and advantages offered by them are analyzed. As for devices, currently the digital payments are performed mainly using cards, smartphones, tablet PCs or PCs. Alongside with these, there is a developing category of electronic devices carried around as accessories - such as smart watches or proximity bracelets.

In general, all situations where digital payments are made can be subdivided into two main groups: Online payments and payments at shops.

Online payments are performed by one of the methods given below in the majority of cases (Gemalto, 2015):

- Entering a 16-digit Primary Account Number code, 4-digit card validity term, and 3-digit protective Card Verification Value code. This is mainly true for one-time online payments;
- Entering a login and password, payment cards previously registered in a cloud (PayPal, Amazon);
- By P2P applications, payments between individuals via the online interface or application (banking transfers).

The development of digital payments performed at shops refers to the areas where progressive change is taking place, with the use of EMV cards, smartphones and other mobile devices increasing (Gemalto, 2015):

1. EMV cards: Secure payment cards with a chip developed up to EMV standard and currently used in most countries of the world. They are also getting more widespread in other markets (e.g., in the USA) that still use magnet stripe cards. The proximity technology is increasingly used in the cards;
2. Mobile devices: At present smartphones are the most popular means of payment at shops and alongside with them devices are already used that are carried around as accessories, such as Apple Watch. The mobile devices can establish connection with terminals of sales outlets at shops, just like EMV proximity cards, using the near field communication (NFC) technology implemented in Apple Pay and Google Wallet/Android Pay systems.

As an alternative, the payment information can be transferred using such technologies as local data exchange via Bluetooth, Wi-Fi, or QR-codes. According to the data provided by Future Market Insights, the average annual growth rate of 39% is forecast for mobile payment transactions for the time span of 2015-2020.

The authors believe that the optimum approach for a commercial bank will be orienting to such a strategy of organizing mobile payments that would provide a multi-purpose way of development not attached to any technology.

Generalizing the data from various banks, the experts have found out that it costs some USD 90-120 thousand to create an application for two main platforms, iOS and Android. Investments into mobile banking are higher, making from some \$250,000 to \$1 million. The investments into the Internet banking depend on the business model selected, scale of activity and other parameters. Development of an online service from scratch costs at the mean \$1-3 mln and more. The size of customer base at which

implementing an Internet service makes sense economically is 10 thousand customers, with the Web service payback period being on average 2-3 years (KPMG, 2012).

The banks point out the trend of using the mobile application for simple or fast payments and the Internet bank for more complicated ones. According to the data of Marksw Webb Rank and Report agency, 41% of users of the Internet banking have access to and use the Internet banking at two or more Russian banks (Marksw Webb Rank and Report, 2015).

The quantity of transactions via the Internet bank exceeds the mobile banking significantly. However, currently the quantity of operations performed via the mobile devices is increasing actively. In large cities, it is with mobile applications that about a half of all Internet users perform various operations on their accounts.

The main items on which a bank can save by using a mobile sales and communication channel for customers are as follows. First, this is transactions cost: Depending on the operation type the costs are reduced 5-10 times. Saving occurs also due to lower expenses for keeping offices and employees.

Second, sales of banking products increase. Proceeding from the actions and operations performed by a customer via remote channels, it is the products and services that will be interesting for this customer that are identified. Thirdly, online service allows enhancing the customers' loyalty.

5. CONCLUSION

Mobile payments provide users with technological advantages in the form of simplified user interfaces, instant access to the account balance, accelerated handling of transactions, as well as support of e-commerce and mobile commerce systems and lower operations handling cost. With regard to this, bringing into life the said advantages will depend on the business models and technological solutions created both in scope and in terms.

Mobile communication devices can ensure emergence of brand new payment services. The first generations of mobile payments systems are capable of using the most basic part of their potential only; yet as the time passes, competition will bring to the market the most efficient and convenient systems.

Together with other mobile phone applications, mobile payments will become a part of an impressive range of various services from which each user will be able to form their own services set for daily use.

Distinctive features of mobile payments systems that are attractive for users are similar to those of mobile communication technology; they can be subdivided into the following groups:

- Erasing the geographical and temporal barriers: All users have to do is to take a mobile phone and they will be able to make payments at any place any time;
- A higher security of use of the systems owing to technical solutions provided for by manufacturers of mobile phones as

well as owing to extended user identification capabilities;

- Easier and quicker making of payments by means of payers' using their own mobile phones with integrated data transfer interfaces, including the NFC technology one;
- An opportunity to obtain extra services, in particular, instant access to the account balance, archiving the transactions, updating the information via mobile communication channels or creating a backup of payment information that allows using it for making payments immediately after sending it to another mobile phone;
- Various synergic services using identification or access control mechanisms that are in their essence a sphere which only begins to develop (e.g., the information about tickets bought and the relevant payments stored in a mobile communication device).

Payment services can become a new group of services similar to additional services of mobile communication. The potential volumes of mobile payments are so high that their cost will go down within very short-terms.

The transition from the industrial economy to the information one has conditioned using the state-of-the-art technical achievements in the sphere of currency circulation and emergence of new generation payment instruments. So early as in the nearest prospect, innovations have an actual chance of becoming a decisive factor of successfulness of payments systems, participants thereof and payment services providers as well as of determining the range of products, payment instruments and means.

REFERENCES

- Lavrushin, O.I., editor. (2011), *Banking Management: Textbook for Universities*. Moscow: Knorus. p560.
- Bell, D. (1973), *The coming of Post-industrial Society. A Venture in Social Forecasting*. New York: Basic Books Inc. p14.
- Digital Payments Become Mobile. Assessment of Emerging Mobile Payments Market Environment. (2015). Gemalto. Available from: <http://www.gemalto.com>. [Last retrieved on 2016 Aug 24].
- Gershman, M.A. (2010), *Innovation Management*. Moscow: Market DS. p200.
- Johansson, F. (2008), *The Medici Effect: Breakthrough Insights at the Intersection of Ideas, Concepts, and Cultures*. Moscow: I.D. Williams. p208.
- Kochetkova, E. (2015), *The Market of Banking informatization: Decline and Today in 2020*. Available from: http://www.cnews.ru/reviews/banks2015/articles/rynok_bankovskoj_informatizatsii_spad_segodnya_i_bum_k_2020_g. [Last retrieved on 2016 Aug 24].
- Mobile Payments as a Source of Income: As Banks Keep Their Place in the Value Chain in the Field of Payments. (2012). KPMG. Available from: <http://www.kpmg.com/RU/ru/IssuesAndInsights/ArticlesPublications/Pages/Monetizing-mobile-How-banks-are-preserving-their-place-in-the-payment-value-chain.aspx>. [Last retrieved on 2016 Aug 24].
- Leinonen, H., Obaeva, A.S., Sumbulov, P.V. (2012), *Mobile payments: What is new and what is from the well-forgotten old? Money and the Credit*, 3, 39-48.
- Mobile Banking Rank. (2015), *Marksw Webb Rank & Report*. Available from: <http://www.markswwebb.ru/e-finance/mobile-banking-rank-2015>. [Last retrieved on 2016 Aug 25].

- Marous, J. (2015), IBM Report Designing a Sustainable Digital Bank. Available from: <http://www.thefinancialbrand.com/55805/digital-bank-customer-expectations>. [Last retrieved on 2016 Aug 25].
- Mehtiyev, E. (2015), Future Bank - The Possible Business Models. Available from: <http://www.futurebanking.ru/post/3035>. [Last retrieved on 2016 Aug 25].
- Myakishev, S.V. (2011), Determination of criteria of efficiency of operations with bank cards as new banking tools. Russian Entrepreneurship, 11-2(196), 128-132.
- Novoselova, E.G., (2006), Classification of banking innovation to guide the development of banking activity. Vol. 292. Tomsk: Herald of Tomsk State University. p153-157.
- Schumpeter, J. (2007), The Theory of Economic Development. Capitalism, Socialism, Democracy. Moscow: Eksmo. p864.
- Surin, A.V., Molchanova, O.P. (2008), Innovation Management. Moscow: INFRA-M. p368.