

# WAYS OF FINANCIAL ENGINEERING DEVELOPMENT IN COMMERCIAL BANKS

Saipnazarov Sherbek Shaylavbekovich

**Abstract**— In this article, the author has studied a number of categories related to “financial management”, “financial engineering” by systematizing the approaches of scientists in the field of methods and results of financial engineering. As a methodological basis, a set of general scientific methods was used: induction, deduction, and comparative methods. At the end of the article, the author suggests ways to develop financial engineering in commercial banks.

**Index Terms**— financial engineering, financial management, innovation, subject, object, methods, result, financial situation.

## 1 INTRODUCTION

In the financial market, credit organizations that introduce new services and products are leaders. The domestic banking system currently uses in practice the most modern technologies and banking products. Innovative services include: Internet banking, online trading, credit products, quick money transfer systems and much more. But despite the fact that modern technologies are used at the organizational level, banks spend a huge amount of time on customer service. The introduction of new services is often chaotic, meanwhile, in world practice, there have long existed and used standards for modeling business processes that help to systematize this process and make it the most effective.

The relevance of this study is due to the fact that in recent years, the development of the banking sector has undergone qualitative changes and this determines the level of development of competition in the market of banking products and services. Banking innovations are an important and stimulating direction for the further functioning of domestic banking institutions.

Innovation at present is not just one of the phenomena that determine economic growth, development, and structural changes. They have become the essence of modern development in all areas of the economy, including in banking.

Financial engineering as an activity to create new financial products is still an insufficiently studied area of economic science. There are no universally recognized theoretical concepts of financial, and especially banking engineering. Foreign studies in this area are applied in nature or reduce the theoretical content of financial engineering to individual economic, organizational, legal aspects of activity. The situation when engineering as a

phenomenon of economic life, as practice exists, but there is no single system of scientific views, predetermines significant interest in its research and further development.

In world practice, targeted research has been conducted to provide solutions to a number of problems aimed at the efficient use of economic mechanisms of resource saving in textile enterprises. In particular, the introduction of innovative technologies in textile enterprises, energy consumption in industrial enterprises, increasing economic potential through innovative approaches. Therefore, the main scientific trends are the further improvement of the research on improving the organizational and economic mechanism of increasing the resource efficiency of textile enterprises.

## 2 LITERATURE REVIEW

The degree to which the problem is developed. The first mention of innovation is found in the works of such prominent representatives of economic thought as A. Smith and D. Ricardo. In its entirety, the theory of innovations was first presented in the works of I. Schumpeter. Mentioning economists who have made a significant contribution to the development of the theory of innovation, it is worth mentioning also domestic scientists, both classics of economic theory (N.D.Kondratyev), and our contemporaries (V. Kushlin, B. Kuzyk, A. Folomev, etc.).

Actual issues of innovation and innovation management were investigated in the works of domestic and foreign authors - such as L.Yu. Andreeva, I.T. Balabanov, J.I.C., Barutin, A.S. Batrutdinov, S.D. Beshelev, L.S. Blyakhman, V.P. Bocharov, V.V. Gorshkov, P.N. Zawlin, A.JI. Ipatov, C. B. Ildemenov, S.D. Ilyenkova, N.D. Kondratiev, E.A. Kretova., A.G. Kruglikov, U.C. Kulagin, N.I. Lapin, G.I. Morozova, N.I. Morozova, A.I. Prigogine, B. Santo, B.A. Soloviev, S.F. Spitsyn, B. Twiss, M.I. Tugan-Baranovsky, R.A. Fathutdinov, Yu.I. Howstov, I. Schumpeter, E.A. Utkin, Yu.V. Yakovets, . Glukhov M.Yu. [3], Zhukov E.N. [4] and others.

*Saipnazarov Sherbek Shaylavbekovich*  
researcher, Banking and finance academy of the Republic of Uzbekistan, Republic of Uzbekistan

The developers of the theory of innovation in the banking sector were I.V. Bu-kato, B.C. Vikulov, E.A. Zabashita, O.V. Miroshkina, A.I. Polishchuk, T.B. Rubenstein, H.-U. Derig, P. Rose, J. Cinky, etc.

The problems of financial and banking engineering were dealt with by Z.A. Vorobeva [2], C. B. Ildemenov, Yu.I. Kapelinsky [1], A. Kovalev, P.V. Kutelev, V.G. Medynsky, Y.M. Mirkin, B.M. Rapoport, A.I. Subchenko L. Galits, J.F. Marshall and V.K. Bansal, J. Finnerty et al.

Current trends in the development of the banking business were highlighted in the works of a number of scientists, such as N.V. Beketov, G.N. Beloglazova, L.G. Bokareva, A. Buzdalin, N. Valentseva, O.A. Gavrilova, G.G. Gospodarchuk, A.M. Donskikh, D.V. Erokhin, K.V. Zamyshlyayeva, O.A. Zverev, M.Yu. Zdorenko, I.V. Izvolskaya, L. Krasavina, E.A. Laricheva, A.B. Letunovskaya, Yu.S. Maslennikov, Kursev D.V. [5].

Despite the large number of works, among them there are no those that would consider banking innovations, the innovation process in a commercial bank, and banking engineering comprehensively. In particular, views on the essence and content of banking innovations remain debatable. The issues of financial and banking engineering remain poorly understood. In addition, in the work of most economists, insufficient attention is paid to methodological approaches to the production and dissemination of banking innovations. The above indicates the need for further research aimed at solving theoretical and applied problems of innovative activities of commercial banks, and also determined the choice of topic, goal and objectives of this research.

### 3 ANALYSIS AND RESULTS

Assessing the degree of knowledge of the problems of the spread of innovation in general, it should be noted the lack of theoretical generalizations and the lack of a comprehensive assessment of the practical achievements of recent years in the field of development of financial innovations in the banking sector of the country. A comprehensive analysis of innovative risks in the banking sector, especially in the context of the financial crisis, has not yet been sufficiently conducted.

The scientific novelty of the dissertation research is the additional argumentation of the diversity and multicomponent nature of financial innovations in the credit system, as well as the identification of the role of banks in the context of the formation of financial innovations and stimulating economic growth

Marketing is one of the effective ways to increase the

efficiency of banks. A modern credit institution implements a strategy of creating competitive advantages of one of the following three types: a strategy of expanding the range of services, a strategy of cost dominance, and a strategy of focusing on a limited and homogeneous group of customers (market niche). Promotion of sales of packages of banking services allows you to increase the commission income of the bank by increasing sales [7].

Define the meaning of the term banking service. The following synonyms of banking services are distinguished: banking product, banking operation.

It is generally accepted that the beginning of the development of the theory of banking services was the end of the 60s - the beginning of the 70s of the XX century, at which time the scientific works of scientists from the University of Michigan, the University of Wales, the University of Geneva, and the work of Brian were published.

The second stage in the development of the theory of banking services occurred during the late 80s and early 90s of the XXth century. This stage is characterized as attempts to study the characteristics of the credit and financial systems of individual countries and the possible consequences of the impact of globalization and centralization of banking capital on the banking services market.

The largest contribution to science was made by the scientific studies of such authors as F. Derek, V. Malpas and many others.

The third stage in the development of the theory of banking services began in 1991 and continues to this day. The beginning of this period was characterized by the introduction of a single European currency - the euro in 1999 and the creation of the European monetary union in 1992, which entailed a revision of the concept of banking customer service.[8]

To begin, consider what the term "product" is. The product or product in economic theory means "economic goods that are sold and bought." Since the bank produces products that are significantly different from the product of the sphere of material production, i.e. goods in the form of money, means of payment, so the banking product has its own specifics. A credit institution provides preferential monetary services; one of the most popular products is the provision of credit.

Until recently, four groups of banking products were identified (Fig. 1). But currently, banks around the world are developing Internet banking, which includes a full range of retail banking services.

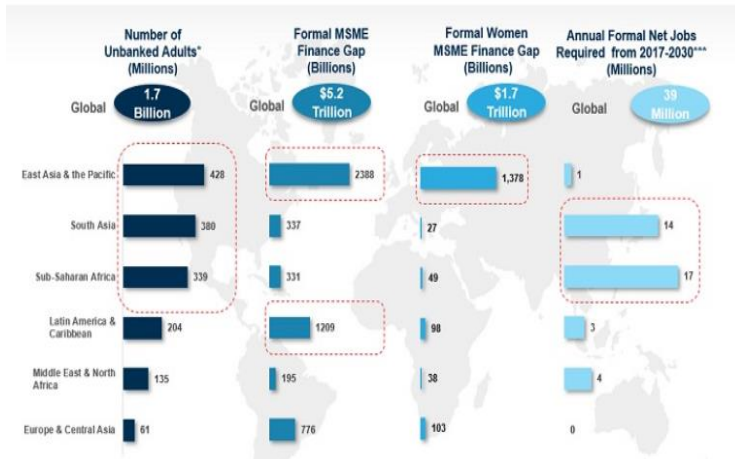


Fig.1 Small and Medium Enterprises (SMEs) role in the World economy

Small and Medium Enterprises (SMEs) play a major role in most economies, particularly in developing countries. SMEs account for the majority of businesses worldwide and are important contributors to job creation and global economic development. They represent about 90% of businesses and more than 50% of employment worldwide. Formal SMEs contribute up to 40% of national income (GDP) in emerging economies. These numbers are significantly higher when informal SMEs are included. According to our estimates, 600 million jobs will be needed by 2030 to absorb the growing global workforce, which makes SME development a high priority for many governments around the world. In emerging markets, most formal jobs are generated by SMEs, which create 7 out of 10 jobs. However, access to finance is a key constraint to SME growth, it is the second most cited obstacle facing SMEs to grow their businesses in emerging markets and developing countries. [20]

Credit services - the main type of services of a commercial bank, which bring it the largest share of income. Credit products, as a rule, should be specially adapted to the requirements of specific customers, therefore, when developing both the set of lending services themselves and the strategy for their promotion, banks should take into account the specific needs of certain groups of customers (industry-specific, by the nature and size of activities, patterns of ownership ) and the individual characteristics of each potential borrower.

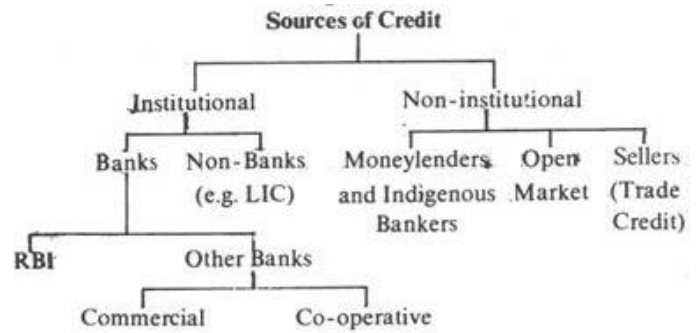


Fig.2. The Sources of Credit.[22]

Domestic banks produce the following loan products:

- lending to projects;
- mortgage credit lending;
- lending to legal entities by overdraft;
- lending on a syndicated basis;
- lending to legal entities based on the opening of a credit line;
- lending to individuals for housing construction;
- lending to individuals for consumer purposes.

Figure 2 shows the classification of loans.

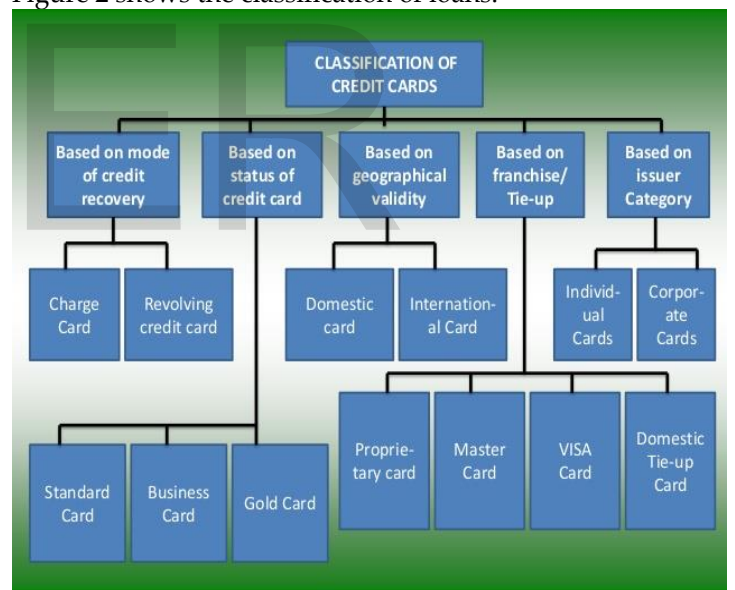


Fig. 3. Credits classification. [21]

Credit, as a banking product, has qualitative, quantitative and temporal characteristics. Consider each feature in more detail. So the time characteristics depend on the types of lending and the quality of the resource base. Qualitative characteristics are determined by the fact that the bank offers a wide range of banking products to its customers. The quantitative characteristics of credit products are determined by the size of credit limits, the size of the bank's equity, the solvency of the borrower, as well as the size of the loan security. The most promising

areas for the provision of credit services are regions where the credit market is not developed or poorly developed, and the potential of the creditworthiness of the population is growing.[18]

Retail credit services are the most profitable business for the bank. This conclusion is determined by the following premises:[16]

- reduction in interest margins on operations with corporate clients, caused by lower interest rates in the domestic market;

- low capitalization of domestic banks and the weakness of the resource base, which limits the ability of banks in terms of lending to corporate business.

- lending to the population brings high income and stable, as well as the diversification of credit risks due to the differentiation of credit services by terms and customers.

Banking innovation goes through a series of stages, which in turn are collectively called the life cycle of banking innovation. The life cycle of banking innovation is a period of time, during this period the innovative banking product has the greatest active life force and brings profit to the bank (producer) or other real benefit. The producer of banking innovation is the producer of this banking innovation. The concept of the life cycle of banking innovation is most important in the planning of production and organization of the innovation process of this banking innovation. This value is manifested in the following:

1. The concept of the life cycle allows the bank management to analyze banking activities in the future development perspective, and in the present. Also, it should be noted that some changes cannot be attributed to banking innovations, such changes include those that do not change the essence of the banking product, for example, changes in interest rates. In view of the foregoing, a product is a banking innovation if it:

- a) a new credit banking product, which first appeared on the domestic financial market, that is, only in one bank;[15]

- b) a new foreign credit bank product for the Country, that is, a new banking product that has appeared on the domestic financial market, but is being sold on the foreign financial market.

- c) new financial technologies.

2. The concept of the life cycle of banking innovation implies the need for a systematic phased work on planning the production of innovations (searching for an idea, organizing an innovation process, creating a banking innovation, its market promotion and diffusion (recession)). If banking innovation is acquired, then this

implies: a study of demand, banking marketing, bengmarketing.[17]

3. The concept of the life cycle of banking innovation is the basis of the mechanism of analysis and planning of innovation. If we analyze banking innovation, we can establish at what stage of the life cycle it is and predict what will happen to it when diffusion begins, and when banking innovation generally ends. Such planning can be carried out throughout the existence of banking innovation, i.e. life cycle innovation. [14]

The bank as a producer of banking innovation has to constantly solve four problems:

1. What needs to be done to expand existing and develop new financial markets?

2. What needs to be done to develop banking innovation?

3. What needs to be done to introduce banking innovation in the market?

4. How to manage banking innovation most effectively?

The solution to these problems is necessary to determine the costs

financial, informational, material, labor resources.

The life cycle of an innovative loan product includes the following seven stages:

1. Development of an innovative loan product.

2. Entering the market.

3. Market development.

4. Market stabilization.

5. The decrease in the market.

6. The rise of the market.

7. The fall of the market.[15]

Of course, the first stage is considered to be the most important stage, since it is on it that the probability of further success of the innovative loan product implementation, its profit, demand volume and the amount of money received from the sale of the product are determined. At the first stage, the manufacturer carries out work to initiate, search for an idea, feasibility study and create a new product. Initiation is an activity that consists of choosing the goal of innovation, setting goals, finding an idea, feasibility study for innovation and developing a new product. The producer pays all costs associated with the development of banking innovation. At this stage, the producer invests financial resources in banking innovation in order to make a profit in the future.[14]

The second stage is indicated by the introduction of an innovative product in the economic life of investor-buyers. The next stage of market development is determined by the growth in sales of a banking product in

the financial market. The duration of this stage shows the time when a new banking product is actively used and the market is saturated with it. These two stages are associated with the promotion and diffusion of the banking product. Diffusion of innovation is the spread of already popular innovation.

Based on theoretical principles and practical recommendations for implementing the strategy of penetration of financial innovations into the credit services market, authors like D.Ya. Rodin and I.V. Surin carried out predictive calculations of quantitative and qualitative parameters of the designed credit innovations at each stage of their life cycle.[13]

Their methodology allows us to more accurately determine the indicators of the effectiveness of the implementation of the marketing strategy of the bank at each stage of the implementation of credit innovations. At the same time, special emphasis is placed on the qualitative parameters of the degree of satisfaction of consumer demand with innovative credit products of the bank and the socio-economic efficiency of credit engineering and the implementation of marketing strategies of the bank.

Consider several points of view of some scientists who have identified the role of banks in the context of the formation of financial innovation and stimulate economic growth.

So, E. I. Deputatova, considering the problems of forming an innovative economy, noted that the lack of financial resources impedes the development of innovations in the countries. The necessity of more active use of banking resources for long-term lending to the economy was substantiated. It was noted that the development of a banking risk management system is impossible without the introduction of financial innovations in the practice of banks, which, due to institutional and legislative problems, have not yet spread. In this regard, special attention was paid to asset securitization, as well as to structured financial products of banks, allowing to meet specific customer needs through a combination of traditional (bonds, deposits, bills) and derivatives (forwards, swaps, options, credit derivatives) financial instruments. This problem, according to E.I. Deputatova, can be solved by qualified structuring of transactions, allowing to reduce credit risks.[11]

KV Savchuk noted that focusing on the innovative development of the country's economy in the conditions of the global financial crisis places high demands on the effectiveness of banking, banking technologies and services, and risk management. This determines the need for a systematic approach to the integration of operational

risk management with the participation of key departments of the bank [8].

At the present stage of development of financial innovations in the domestic banking sector, the following areas are manifested:

- virtualization of financial innovations (the introduction of remote service channels, such as Internet banking, a round-the-clock hotline, electronic money transfer technologies);
- Technologization of financial innovations (using the latest developments in the field of technology, improving banking equipment, accelerating the work process);
- the use of social connections and circles of communication to include customers in the work of the bank, if they want to. Crowdsourcing is becoming increasingly popular, and Widiba (Italy), an example of this, asked customers to develop the functional features of their new mobile bank [5].

Financial innovations are becoming a means of increasing competitiveness in the banking market, where everyone strives to take a leading position by providing new, high-quality and profitable services. Active implementation of financial innovations leads to changes in the behavior of credit organizations, which change the intensity of competition in the banking market [10].

#### 4.CONCLUSIONS

Thus, having analyzed all of the above, we can conclude that innovation contributes to economic growth, development and structural changes. An innovative banking system in Countries is just beginning to take shape. To be at a high level of innovative development, domestic banks need to rely on the experience of leading foreign and their forecasts innovative development to identify priority areas for the development of banking technology.[9]

To survive the competition, banks The following tasks need to be solved:

- increase flexibility and adaptability to the market,
- automate banking processes, use new computer technologies, virtual banking and financial technologies,
- switch to remote service, use of Internet banking,
- create and introduce new banking products or services based on new technologies,
- comprehensively use new information and communication technologies for electronic marketing,
- introduce innovations in the field of forms and methods of management, changes in the qualifications of employees.[12]

Thus, innovations in the banking sector in the

context of globalization are an urgent need for domestic banks. To successfully participate in the competition, domestic banks need to focus only on the most advanced technologies and products.

22. <http://www.yourarticlelibrary.com/economics/credit-5-different-kinds-of-credit-explained-with-diagram/40475>.

## REFERENCES

- [1]. Kapelinskii Yu.K. Finansovyi inzhiniring s ispol'zovaniem tsennykh bumag [Financial Engineering Involving Securities]: dis. ... kand. ekon. nauk. Moscow, 1998.
2. Vorob'eva Z.A. Finansovyi inzhiniring na rynke korporativnykh obligatsii [Financial Engineering on Corporate Bonds Market]: avtoref. dis. ... kand. ekon. nauk. Moscow, 2004.
3. Glukhov M.Yu. Strukturirovannyye finansovyye produkty v sisteme finansovogo inzhiniringa [Structured Financial Products in Financial Engineering]: avtoref. dis. ... kand. ekon. nauk. Moscow, 2007.
4. Zhukov E.N. Finansovyi inzhiniring infra-strukturnykh edinit v elektroenergeticheskoi sisteme [Financial Engineering Infrastructure Units in the Electric Power System]: avtoref. dis. ... kand. ekon. nauk. Ekaterinburg, 2009.
5. Kurseev D.V. Teoriya i metodologiya protsessov ucheta sobstvennosti [Theory and Methodology of Accounting Processes Property]: avtoref. dis. ... d-ra ekon. nauk. Orel, 2008.
6. Inzhiniring kak integral'naya oblast' znaniy [Engineering as an Integral Field of Knowledge]. Available at: [www.ntsrf.info/upload/My/nauka/Dyachenko.pdf](http://www.ntsrf.info/upload/My/nauka/Dyachenko.pdf) (accessed 18.03.2020).
7. Van Horne J. Of Financial Innovations and Excesses. J. of Finance, 1985, vol. 40 (July), pp. 621-636.
8. Miller M.H. Financial Innovation: The Last Twenty Years and the Next. J. of Financial and Quantitative Analysis, 1986, vol. 21, pp. 459-471.
9. Miller M.H. Financial Innovation: Achievements and Prospects. J. of Applied Corporate Finance, 1992, vol. 4, pp. 4-12.
10. Faulhaber G., Baumol W. Economists as Innovators: Practical Products of Theoretical Research. J. of Economic Literature, 1988, vol. 26, pp. 577-600.
11. Campbell J.Y., Viceira L.M. Inpress. Who Should Buy Long-term Bonds? American Economic Review. Available at: <http://www.istor.org/stable/2677900> (accessed 02.06.2015).
12. Finnerty J.D. Financial Engineering in Corporate Finance. An overview. Financial management, 1988, vol. 17, no 4, pp. 56-59.
13. Merton R. Continuous - Time Finance. Cambridge, MA, 1992.
14. Kopcke R.W., Jagtiani J. Financial Innovation and Standards for the Capital of Life Insurance Companies. New England Economic Review, Federal Reserve Bank of Boston, 1995, January/February, pp. 29-57.
15. Hoda A. I. Mechanisms of Financial Engineering as New Alternatives. InternationalRefereedResearch J., 2013, vol. IV, is. 3, pp. 21-40.
16. Marshall D.F., Bansal V.K. Finansovaya inzheneriya [Financial Engineering]: polnoe rukovodstvo po finansovym novovvedeniyam: translation from English. Moscow, 1998, p. 33.
17. Koo H.K. New Trends in Financial Engineering. Works under the Auspices of the World Class University Program of Ajou University. October 2011. Available at: <http://www.iospress.nl/book/new-trends-in-financial-engineering/> (accessed 20.02.2020).
18. Blank I.A. Slovar'-spravochnikfinansovogo menedzhe-ra [Dictionary of Financial Manager]. Kiev, 1998, p. 359.
19. Rapoport B.M., Subchenko A.I. Inzhiniring i mod-elirovanie biznesa [Engineering and Modeling of Business]. Moscow, 2001, p. 109.
20. <https://www.worldbank.org/en/topic/sme/finance>.
21. <https://www.slideshare.net/gauri101/credit-cards-ppt-1>