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LEADERSHIP STYLES IN TRANSITIONAL ECONOMIES

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ABSTRACT

Leaders are modelled by cultural background and environmental constraints (Hofstede 1993). However, in post-communist transitional countries, leadership dwells in between the autocracy practiced in the labor market (Elenkov 1998, Michailova 2002) and another dimension of transformational leaders promoted by the Western theories. Russia and Albania are two countries that shared a common political, economic and cultural background as elements of a system that drew the frames of what leadership and entrepreneurship, not allowing them to naturally develop in the “natural habitat” of the free market. The aim of this study is to explore how persistent the common historical background is in today’s leadership style by comparing different aspects of leadership in countries with transitional economy. This cross-cultural study uses a survey method to explore the leadership dilemma of MBA students distinguishing employee-leaders from entrepreneur-leaders. The study uses a sample of MBA students who have academic knowledge of leadership and active in the labor market. The main finding of the paper is that the similar background of Russia and Albania prevails in spite of the changes that the countries went through after the fall of the old system. It is also shown that once put in an entrepreneur’ position respondents lean towards a more authoritarian leadership style. These initial results can be enhanced in the future research in other countries with transitional economy.

Key Words: *Leadership Style, Transformational Leadership, Authoritarian Leadership, Entrepreneurship, Transitional Economy*

INTRODUCTION

Leadership has gained an increasing interest in the last decades in the context of rapid environmental and technological change. Though in the midst of a globalization and the borderless knowledge movement of the 21st century that holds in its core transformational and transactional leadership (Bass 1997), the academic discourse and ongoing research keeps supplying evidence and data of the importance of the cultural background. It has been a long way since 1967, when Hofstede conducted the first cross-cultural research in 50 countries (Hofstede 1983). Restlessly the results have been enhanced, the valuation criteria (also known as dimensions) extended and the portfolio of countries diversified. However, questions arises about countries that impose system and regimes which model every area of the society including their identities – as communism had done in the past and as other dictatorships are doing in the present. Hofstede (1983) argues that nations are more than political units - they are rooted in history, the citizens derive value and identity from it, and the thinking too is conditioned by the national culture factors. Seeing it through leadership lenses, it becomes challenging to determine where leadership itself stands currently in some Eastern/South-Eastern countries that have for a long time been part of the stronghold of systems that have marked their national identity, in a

time when Western based theories have trespassed borders not only in academia, but also on the enterprise level.

One of the most widely accepted definitions of the 20th century views leadership as “the ability of an individual to influence, motivate and enable others to contribute towards the effectiveness and success of the organizations of which they are members” (Dickson et al., 2012, House et al., 2002). Defining culture becomes more challenging than defining leadership, since we refer to it as a term to describe many things like different groupings in the society or the set of parameters used to differentiate one society from another (Dickson et al., 2012, House et al., 2002). In leadership investigations culture has been used to define shared motives, values, beliefs, identities and interpretations of meanings of significant events that result from common experiences of members of collectives and transmitted across age generations (House et al., 2002).

LITERATURE REVIEW

Two positions on the nature of leadership have risen in the academic debate. On one side, scholars like Bass support the idea of its universality. They argue that although leadership theories were founded in the United States, leadership is a universal phenomenon, due to its presence in all communities, technological and information exchange, and English as an international language (Bass 1997). Different leadership styles are suggested in the literature. Transactional leadership refers to a kind of relationship between the leader and the follower where both engage in order to pursue and accomplish their self-interest (Ardichvili and Kuchinke 2002). It takes the form of contingency reward when the leader explains the follower (with or without his participation) what she should do in order to be rewarded, or it takes the form of management-by-exception, where the leader intervenes when the follower fails to meet the aim. Transformational leadership tries to put into alignment the interest of the followers with those of the organization. The movement past self-interest is reached through charisma, inspiration, intellectual stimulation or individualized consideration (Bass 1997).

This position was supported by the Globe Project (Global Leadership and Organizational Behavior Effectiveness), a program that has been exploring 61 cultures for more than 21 years, and has identified six dimensions that can be considered culturally generalizing. However, some researchers hesitate to call them “universally desirable” due to significant variability across the countries (Dorfman et al 2012). On the same subject other studies suggest that leadership is best predicted by amalgamation of attributes that would make its effectiveness consistent in case of culture rotation (Gordon and Yukl 2004; Zaccaro 2007) and that the attributes should reflect fast response to the different situations presented, adaptability and flexibility (Zaccaro 2007).

On the other side of the debate stand scholars like Hofstede who point at the controversies in management and leadership theories (Hofstede 1980, 1983, 1993). In his view management theorists are humans – raised in a particular society, and their ideas were influenced by the environment (Hofstede 1993). To support his idea empirically he developed four initial criteria referred to as “dimensions”; the level of acceptance of the unequally distributed power (Power Distance), the level of uncertainty avoidance (Uncertainty Avoidance), tendency for caring for acquisitions and money vs. caring for people and life quality (Masculinity vs. Femininity) and tendency to care for the family/group vs. the tendency to care only for oneself (Individualism vs. Collectivism). From the cultural perspective leadership behaviors will change depending on different cultural profiles. For example, in some cultures strong decisive actions

are valued in a leader, and in the others democratic approach can be a prerequisite (Den Hartog et al 1999; van Emmerik et al. 2008).

The GLOBE project demonstrated that cultural influences leadership behaviors through expectations of the societies; leaders who try to lead in a manner that is consistent with the cultural expectations are more effective (Dorfman et al 2012). For instance, in societies with performance oriented values they desire leaders who are charismatic, participative and independent. These expectations are positively related to cultural values of performance orientation, gender and human equality, and negatively related to power distance (Dorfman et al 2012).

RUSSIA AND ALBANIA IN EMPIRICAL STUDIES

Russia and Albania are two countries that have shared the same ideology in the past, which was deeply rooted and became legacy for the future. In the 1970's Russia were a strong economic and political ally, a technology and education provider, as well as a designer of many others areas of the Albanian society.

Clearly it has been challenging for Russian business leaders to operate within changing European environment with the load of the legacy of soviet management, especially those who had developed their views during the Soviet era (McCarthy et al., 2005). Different studies give a good appreciation of the leadership transition dynamics in Russia, but no clear results are given on a defined style.

Elenkov (1998) was one of the scholars who studied the dimensions in the context of development of Russian business culture. According to him, as there is a high power distance and strong collective mentalities in the society employees expect a traditional strong authoritarian leader. Other scholars critically view the implementation of the Western based styles of leadership in Russian companies. Michaelova (2002) concluded in her study that Russian companies face one-man authority, anti-individualism, strong hierarchy that make empowerment problematic. Other researchers (Fei et al., 2001) found that in Russia the employees preferred a leader who would focus on how to achieve organizational goals, through employee commitment and involvement, but with a centralized command.

These results are, however, controversial, as cultural values may not be stable overtime, and may differ by the country (Ardichvill and Kuchinke 2002). In a comparative leadership study between ex-Soviet Union countries - Russia, Georgia, Kazakhstan and Kyrgyzstan and Germany, the authors found that contingent reward and inspirational management received the highest points in all the ex-Soviet countries (Ardichvill and Kuchike 2002), meaning that elements of both transformational and transactional leadership were present.

As for Albania, the country is less explored in academic discourse in terms of leadership. Albania was included in the later stages of the GLOBE project of Central and East European countries with a focus on middle managers in the industries of food processing, financial services and telecommunication (Koopman et al., 1999). In terms of leadership it was grouped with other South-East countries scoring high in such managerial characteristics as administrative competence, autocracy conflict inducement, diplomacy, face-saving, non-participation and status consciousness (Kompan et al., 1999).

As shown in the studies, Russia has been compared against many countries, Western and from the Eastern Block, in terms of leadership. The comparison that was left unexplored is with countries like Albania who voluntarily "sovietized" itself and underwent the system's metamorphosis for many years, but after its fall took completely different path (while Russia is

big and “stubborn” player in the international arena, Albania became a West oriented country and has recently received the status of a candidate country to enter the European Union).

THEORETICAL FRAMEWORK

This study aims to explore if the common political, economic and cultural background of Russia and Albania is still reflected in present leadership style. From this perspective, there are three research questions that authors aim to answer in order to analyse different aspects of leadership in two countries.

Research question 1

What is the present 'leadership style' in the countries with transitional economy, and is the similar cultural background of Russia and Albania reflected in the characteristics of the present leader?

Research Question 2

Is there a relationship between a direction of career (entrepreneur or manager in organisation) and perceived leadership style?

This question will help to understand the leadership style perceived by entrepreneurs and managers in organisation and to see if there are differences. In both countries entrepreneurship did not evolve gradually in a “natural habitat”, nor was it cultivated or taught in universities or forged by the dynamics of free market like it is in our days.

Research Question 3

What kind of leader do students aspire to be and to what extent their aspiration is affected by the present supervisor? Would they be a different kind of leader if they were to be entrepreneurs and bear the risk of the business activity?

To answer this question authors looked if there is a connection between the kind of leadership students face today and the kind of leader they would want to be in the future, and if it affects their efficiency and performance.

METHOD

Based on the majority of prior studies on both countries and the results of the GLOBE research project, Russia and Albania are in the same group of leadership prototypes, where authoritarian leadership style and leaders who keep centralized control prevail.

Therefore, the variable of interest in the study is the 'leadership style', and more precisely the type of leader preferred by different groups of respondents in two countries with similar background: transformational leader or authoritarian leader.

The research design chosen to answer the research questions is a cross-sectional research design (social survey). For the survey researchers targeted a sample of MBA students. The rationale behind the choice is the following: students are “caught in transition” between the Western-based academic knowledge they receive in college, and the leadership style that they find in the labor market. It is pre-determined that the respondents are active in the labor market,

as the timetable is tailored in a way that allows them to attend classes in the evening after they complete their working hours.

The cities selected for the research were Kazan in the Republic of Tatarstan, Russian Federation and Tirana in the Republic of Albania – two cities with high university concentration. Kazan has a long tradition of being one of the centres of education, not only for the Russian Federation and most Central Asian countries, but also for international students. Tirana on the other hand, as the capital of a developing country, is the centre of the most prestigious private and public university education. In the case of Kazan the random sample of MBA students was selected from the registrar of Kazan Federal University, and the selected students were reached by e-mail. The Albanian respondents were chosen from the Department of Economics of the University of Tirana (as the representative of public education) and the European University of Tirana (one of the most well-known private universities of the capital). Parts of the questionnaires were distributed with the assistance of the faculty as print-outs, and part was sent by e-mail by students' coordinators.

Primary data collection method was used, and a structured questionnaire was designed with questions that implicitly address all the variables necessary for the analysis: country of study, years of work experience, preferred direction of career (manager in organisation or entrepreneur), and 'leadership style'. The aim was to tap two main concepts - leadership and entrepreneurship. The data was entered into SPSS program to test the following hypotheses:

1. Similar cultural background of Albania and Russia is reflected in their present leadership styles.
2. There is a relationship between career path chosen and perceived leadership style.
3. The leadership style that students face in the labor market influences the aspired leadership style for the future.

Frequency distributions were produced to evaluate the presence of the students in the labor market. The results showed that 50.9% of students had been active in the labor market before they started their Master's degree. 23.7 % of the respondents had a work experience less than a year, which meant they started their work after they had enrolled to the MBA program.

Descriptive statistics were used to see how high the entrepreneur's spirit was among the respondents. Results showed that only 32% of the respondents preferred an entrepreneurial future direction compared to 67.3% that preferred to be Manager/Employees, in other words preferred stability of a job where they could make a career in managerial positions. Respondents were asked to rank reasons for choosing an entrepreneur career path. Respondents put the following reasons on the first place: Personal achievement (49.1%), Economic reasons (25.5%), Need for Independence (20%) and Dissatisfaction from previous jobs (5.5%).

RESULTS

Hypothesis 1

In order to understand if similar cultural background of Albania and Russia is reflected in their present leadership styles, first, respondents' 'present leadership style' was determined. The questionnaire was designed incorporating well validated measure for a dependent variable 'present leadership style' which was calculated from the answers to eight different questions – each tapped on a three-point scale (0-2). Total score measured respondents' perceived leadership style ranged from 0 to 16, the higher was the score the more respondent was disposed towards autocratic present leadership style, and, conversely, the lower the score the more she was

disposed towards transformational present leadership style. The results showed that the mean score on the perceived leadership style was rather high (10.30), with a standard deviation of 2.32, which was consistent with the previous studies, that characterize present leadership style in post-communist countries as authoritarian.

Following determination of the present leadership style, researchers aimed to see if the mean score is similar in Russia and Albania. The following hypothesis was tested with a use of a t-test.

H0: There is no significant difference in the leadership style in Albania and Russia.

H1: There is a significant difference in the leadership style in Albania and Russia.

The results showed a t-value of -.756 with 35 degrees of freedom, and a probability of .455. As this is greater than .05, there is no significant difference between Russian and Albanian MBA students in how they perceive the present leadership style.

Hypothesis 2

H0: There is no relationship between direction of career (entrepreneurs or manager/employee) and the perceived leadership style (autocratic, transformational or very liberal).

H1: There is a relationship between the direction of career and the perceived leadership style.

Chi-square test was done to test if the career path is independent to the leadership style respondents choose. The results reported that there is no significant relationship at 5% significance level between career path and perceived leadership style, hence, hypothesis 2 has not been substantiated ($\chi^2 = 3.393$, $df = 2$, $p = .181$).

Hypothesis 3

H0: Present leadership student's face in the labor market does not have an influence on the kind of leader students want to be.

H1: Present leadership found in the labor market influences the kind of leader students want to be.

For the third hypothesis qualitative approach was followed and unstructured interviews were chosen for primary data collection. The research was aimed to explore why students aspired in engaging in participative leadership forms when the culture and the labor market suggest the opposite. Students affirmed that they were not satisfied with present autocracy and would like to find a more participative leadership style. As well they stated that often the supervisors did not have a clear vision of where the company was supposed to go, and this was reflected in manager-employee relationship. It was not uncommon that tasks delegated to the employees were contradictory and that the supervisors seemed "not to know what they want". However, the results also showed that being put into entrepreneur position, MBA students lean towards more autocratic leadership style, and prefer control over activity through direct supervision.

CONCLUSIONS

As shown from the analysis, Russia and Albania share common autocratic leadership style in the market today, but the future generation of manager professionals aspire to engage in a more transformational leadership style. Results also show that career path that students choose

does not relate with the perceived leadership style. However, further in-depth interviews might shed light on the factors that affect leadership style.

Among other unexplored reasons, that provide a good basis for future studies, is the conclusion that present autocratic leadership they face in their working relationships causes them to want to be the opposite. They aspire for a leader that has a clear vision of the future of the organization and transmits it to the followers; this helps them to understand their tasks better and perform them more efficiently. With regards to students' desire to make a managerial career we predict that they might find it difficult to achieve their aim while dealing with autocratic leaders, who are not keen to engage with employees, and thus impede the employees' skills to manifest.

Another conclusion made is that when students are being put in an entrepreneurial position their vision of the role of leader goes to the other extreme. They become an autocratic entrepreneur/manager. Being familiar with the difficulties and the inconsistency of the environment in transitional economy, and the business policies applied by the government, they try to lean towards having full control over the business and determining manager-employee relationships and activities by well-defined procedures, scopes of work and reward schemes.

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RUSSIA IN THE GLOBAL ECONOMY AFTER THE OLYMPIC GAMES: MYTHS AND REALITIES

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ABSTRACT

This work was created during the XXII Olympic Games in Sochi (Russia). On the one hand, some experts wondered about what happen to Russian economy after the competition of this expensive project. On the other hand, academics note that the Games has a very small, but positive effect on the economy. The growth of GDP will remain at a low level, but in the positive zone.

In this regard, the purpose of this research is conducting a systematic, comparative analysis and to make an assessment of the Russian economy after the Olympics at the global level. This research contains a statistical analysis of the dynamics of macroeconomic indicators before and during the Games, the analysis of national accounts of the Russian Federation. Also, in this research was made a review with opinions of foreign experts of economy and economics students of Kazan Federal University (poll conducted among students of 2nd year, 86 people).

Obtained results allow to make a few of assumptions of foreign and domestic experts grouped into two main groups «Myths of the economy» and «economic reality». The first group of myths related assumption that the Games will be a catalyst of economic problems. In our point of view, as a result of the preparation for the Olympic Games, Sochi has been turned into a world class resort; revenues generated by this federal budget will be spent on solving social problems somewhere else. Among the findings of the «economic reality» - to assess the level of infrastructure development in the regions of Russia, as well as the principles for the development of international economic relations in modern after Olympic Russia.

Key Words: *Olympic Games, Economic Analysis, Myths, Economic Reality, Interviews*

INTRODUCTION

As you know Russia is a country of winter. And winter sports are really popular here. There are a lot of sports facilities, sports grounds, developed infrastructure and serious investments. So our committee decided to make Olympic Games in city, called Sochi. Because Sochi is one of the cities, that had all the possibilities, places for making Olympics. By the way, Sochi is the largest resort city in Russia, an important transportation hub as well as major economic and cultural center of the Black Sea coast of Russia. In Sochi the summer is really hot and sunny. The sea is very warm and there are a lot of tourists that visit Sochi, most of them Russians (almost 4 million tourists visited Sochi in 2013). But after Olympics, Sochi became a world famous resort not even in summer, but also in winter. Number of tourists in future will increase by 30%.

When the games weren't even opened, Sochi Olympics got into the history of the Olympic movement and became the most expensive Olympiad in human history. Expenses became more than 50 billion of US dollars.

The Winter Olympic Games Sochi-2014 which already belongs to history showed that the Russian Federation government and society are able to successfully implement international projects of the highest level.

MATERIALS AND METHODS

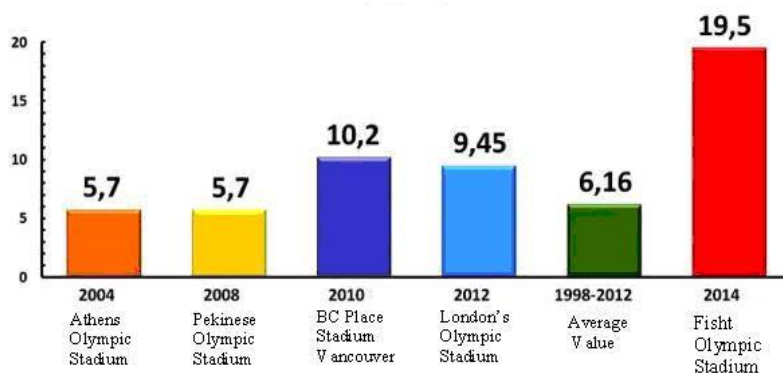
In summer 2007 our president V.V. Putin said, that the overall cost of the Sochi Olympics will be \$ 12 billion.

This statement is kind of shocked everybody because in fact, Putin openly declared, that he is ready to spend much more money, than it offered Russian competitors: the Austrians and South Koreans. As we mentioned before, final figure costs are 50 billion of US dollars - exceeded Putin's named summary more than in four times.

So, where is the whole these moneys? First of all, they are in construction costs. Down here, we can see the costs for the construction of sports complexes. For comparison, we have included the cost of other Olympics (Fig.1, Fig.2).

Second, the cost rising of the Sochi Winter Olympics more than in twice is abnormal and can be explained by the banal theft, corruption, embezzlement and complete lack of professionalism of performers.

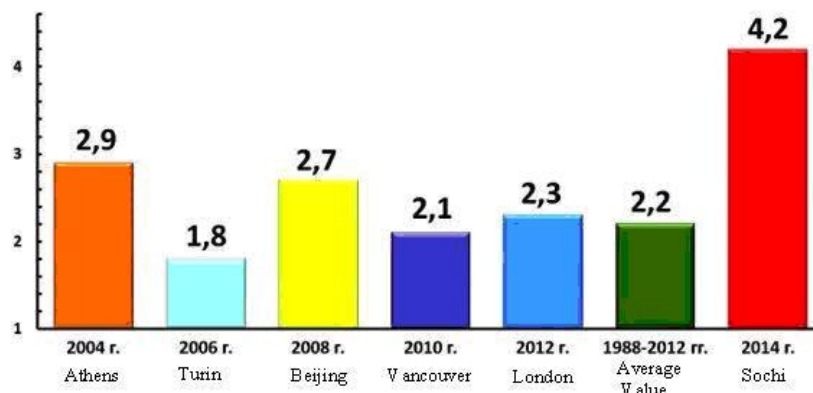
Figure 1
THE COSTS ON CONSTRUCTION THE CENTRAL OLYMPIC STADIUM (THOUSANDS \$ UPON SPECTATOR)



Experts of the international rating agency Moody's stated that the Olympic Games in Sochi will not bring visible benefits to the Russian economy. The Moody's says that the effect of the Olympics will be unequal for different subjects of economy. Probably, it will be neutral for state-owned corporations, because their brands have already recognized and do not need in additional promotion and Olympic costs are low, comparing to the overall scale of activity. In the retail sector expecting a sales growth during the Games, but this positive effect will be short and will not have much impact on businesses.

Possibly, the telecommunication companies will be able to recoup quickly their investments by covering unmet demand in the region. Energy companies are only slightly got a benefit from the modernization of infrastructure, which is financed mainly by public funds.

Figure 2
IN HOW MUCH HAS THE COSTS INCREASED DURING THE CONSTRUCTION



International Sponsors will benefit from the Olympics due to obtained exclusive marketing rights. Media companies will be able to increase the amount of advertising sold with its growing popularity of digital interactive display broadcasts on computers and smartphones. The report says Moody' says, that the Olympics will have negative impact on the financial condition of the Russian state-owned banks that provide loans and capital invested in Olympic developers.

The main economic risks associated with the cost of the Games are the uncertain prospects of the Olympic legacy, which eliminates all the short-term positive effect. So, for example, the city of Sochi and the entire Krasnodar region received tangible benefits from government subsidies allocated for the preparation for the Games. But later they will have to provide the content of the Olympic facilities, and established in the Olympic infrastructure project, judging by emerging in recent days in huge quantities reviews, leaves much to be desired.

This applies, in particular, to the quality of the onshore facilities and road networks. Chances are good that soon a significant part of infrastructure will require additional funds for rehabilitation and completion that will further lengthen the payback period of record (\$ 50 billion) Olympic investment.

RESULTS

Among the advantages, disadvantages and the main problems with the program of the Winter Olympics in Sochi, mentioned by experts (professors of Kazan federal university, Russia) and students (76 people), we have combined into two groups: «Myths of the economy» and «Economic reality» (Tab.1, Tab.2).

Also, students mentioned myth about disinformation in social networks. The information spreads stubbornly In Social Networks, in which the authors divide the cost of the Olympics to the number of citizens of Russia and claim that instead of the Olympics could be distributed to every Russian 4 million rubles.

In fact, a simple calculation shows that this is not true. If you multiply 4 million rubles to 143 million people in Russia we get 572 trillion rubles (almost 16 trillion of U.S.\$) - an

astronomical sum, which corresponds approximately to the entire U.S. public debt. In reality, on the Olympics have been spent in 10,000 times less than budget money.

Another common myth, that the students have identified - the Olympic Games do not need Russian regions from an economic standpoint. It is not! At least, with tourist and recreational points of view.

Table 1
THE RESULTS OF POST-OLYMPIC SURVEY 2ND YEAR STUDENTS MAJORING IN "ECONOMICS"
OF KAZAN FEDERAL UNIVERSITY

Myths of the economy	It's myth. «Agree»/ «Disagree»	Economic reality	It's reality. «Agree»/ «Disagree»
I. Advantages		I. Advantages	
1) the creation of jobs;		6) increasing the prestige of Russia and it's positioning in a worldwide	
II. Disadvantages		7) massive increasing interest in sports among the population, provision of sports facilities in the region;	
2) significant problem of quality of construction, the principal risk is that the main sports facilities are being built in the Imereti lowland, which means in fact, in the swamp;	49% / 51%	8) colossal development of infrastructure in Sochi, his resort and tourist potential;	84% / 16%
3) Sochi isn't gain from the rush of Olympic construction, which is mainly in the triangle Adler - Krasnaya Polyana - Imereti lowland;	49% / 51%	II. Disadvantages	95% / 5%
4) undeveloped infrastructure, poor environment, dirty beaches and coastal waters will further contribute to the reduction of interest in Sochi after the Olympics, stressing the problem of lack of demand for facilities under construction;	29% / 71%	9) The most serious problem in Russia, as in other countries, that taking Olympiads, Universiades, is the demand of Olympic venues after the games. Given half a million populations and seasonally Sochi resort importance of the region, take place a high risks of not having a payback of objects.	77% / 23%
5) the pollution environment;	40% / 60%		48% / 52%

CONCLUSIONS

Among the experts of Kazan Federal University majority (83%) agree that the economic situation of the myths are 3) and 4) economic reality - 6) and 8) (91% of respondents agreed) (Tab.2).

Table 2
THE RESULTS OF POST-OLYMPIC SURVEY OF EXPERTS OF KAZAN FEDERAL UNIVERSITY

Myths of the economy	It's myth. «Agree»/ «Disagree»	Economic reality	It's reality. «Agree»/ «Disagree»
<p>I. Advantages</p> <p>1) the creation of jobs;</p> <p>II. Disadvantages</p> <p>2) significant problem of quality of construction, the principal risk is that the main sports facilities are being built in the Imereti lowland, which means in fact, in the swamp;</p> <p>3) Sochi isn't gain from the rush of Olympic construction, which is mainly in the triangle Adler - Krasnaya Polyana - Imereti lowland;</p> <p>4) undeveloped infrastructure, poor environment, dirty beaches and coastal waters will further contribute to the reduction of interest in Sochi after the Olympics, stressing the problem of lack of demand for facilities under construction;</p> <p>5) the pollution environment;</p>	<p>20% / 80%</p> <p>63% / 47%</p> <p>50% / 50%</p> <p>39% / 61%</p>	<p>I. Advantages</p> <p>6) increasing the prestige of Russia and it's positioning in a worldwide</p> <p>7) massive increasing interest in sports among the population, provision of sports facilities in the region;</p> <p>8) colossal development of infrastructure in Sochi, his resort and tourist potential;</p> <p>II. Disadvantages</p> <p>9) The most serious problem in Russia, as in other countries, that taking Olympiads, Universiades, is the demand of Olympic venues after the games. Given half a million populations and seasonally Sochi resort importance of the region, take place a high risks of not having a payback of objects.</p>	<p>91% / 9%</p> <p>88% / 12%</p> <p>91% / 9%</p> <p>80% / 20%</p>

CONCLUSION

The first group of myths related assumption that the Games will be a catalyst of economic problems. In our point of view, as a result of the preparation for the Olympic Games, Sochi has been turned into a world class resort; revenues generated by this federal budget will be spent on solving social problems somewhere else. Among the findings of the «economic reality» - the high level of infrastructure development in the regions of Russia, as well as the principles for the development of international economic relations in modern after Olympic Russia.

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E-LEARNING PRACTICE USING MOODLE BY LEADING UNIVERSITIES IN THE RUSSIAN REGION

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ABSTRACT

The aim of this work was to analyze the principles and to use e-learning practices in 70 of the best universities in the world in development of copyright-based distance learning courses in Moodle of Institute of Governance and Territorial Development KFU. Wherein, we used the methods of grouping and regional analysis. Since 2008, the "Modular Object-Oriented Dynamic Learning Environment" used at Kazan federal university (Russia, Kazan) on three main areas: "Zilant", "Bars" and "Tulpar". The author and his colleagues developed a series of e-learning resources in disciplines of "Economic geography", "Regional Economics and Management", etc. The analysis of using the system of Moodle in above universities for teaching economic subjects revealed a number of features:

a) The simplicity and popularity of the LMS «Moodle» resonates with students from many universities. For example, the London School of Economics and Political Science and the University of London was originally used as a commercial product (WebCT), but at the moment the the transition of the Moodle system was almost completed, acting on a uncommercial basis, and b) nowadays plug language packs allow you to achieve full localization in 43 languages Moodle. The plan of the KFU science group is using the system in Tatar language, c) The Princeton Regional Schools Moodle Server shows us one more time about the consistency of the system: flexibility, interactivity, cooperation and motivation. Moodle can combine the creation, editing, and reviewing training materials of the teacher and the student.

INTRODUCTION

Education in the 21st century requires the use of creativity and innovation in teaching technology. In the world's leading universities, including the top 100 QS World University Rankings [3], the tendency is observed of increasing the development work of students and the decreasing of classroom lessons. Therefore, Learning Management Systems (LMS), which form the basis of effective provision of distance education, are quickly developing. For LMS information we can refer to:

- Open source software: Moodle, Sakai, ATutor, Whiteboard;
- Commercial: WebCT / Black board, Graderpoint, Desire2Learn, Learn.com.

The vast amount of functions and possibilities within the system of education management have made Moodle (Modular Object-Oriented Dynamic Learning Environment) a vital virtual learning space used in major universities such as Massachusetts, Stanford, Princeton, Oxford, London School of Economics, etc. Courses on a variety of subjects, including economic disciplines, are available on the universities' servers.

MATERIALS AND METHODS

In the presented work a review was carried out of the top 70 universities in the world (TOP-100) on the application of the open LMS Moodle for teaching economic subjects. The review was done in order to analyze the principles and practices of the use of e-learning by the investigated world Universities in the development of copyrighted distance learning courses on the basis of Moodle in the Institute of Management, Economics and Finance of Kazan Federal University (Russia, Republic of Tatarstan, Kazan).

The review includes a system of economic disciplines, which are publicly available and are free. This invaluable humanitarian venture in universities enabled the use of the foreign practice of e-learning in Kazan Federal University for teaching students of the specialty of "Regional Economics and Management" and "World Economics".

Since 2008, the "Modular Object-Oriented Dynamic Learning Environment" has been used in Kazan Federal University in three main areas: "Zilant", "Bars" and "Tulpar." The names of the areas are from Tatar legends and fairy tales.

Zilant - a mythological creature that has the appearance of a dragon or snake. In 1781, by imperial decree, Zilant was placed on the coat of arms of the Kazan province. Since then Zilant has been the symbol of the city of Kazan. "Zilant" - "historically" the first platform in Kazan Federal University, which was established in 2008 on the basis of the Faculty of Computational Mathematics and Cybernetics (currently a member of the Institute of Computational Mathematics and Information Technology). ZILANT uses MOODLE version 1.9.x.

"Bars" - the central image of the coat of arms of the Republic of Tatarstan. In ancient times, the Volga Bulgars' deity of fertility and patron of children. On the coat of arms of the Republic of Tatarstan "Bars" is the patron of the citizens of the Republic and its people. The platform "Bars" was established in the Tatar State Humanitarian and Pedagogical University (TSHPU), which became part of Kazan Federal University in 2009.

"Tulpar" - a winged horse in Tatar and Bashkir mythologies, which corresponds to Pegasus in Greek mythology. This platform has been in use since 2012, and it is equipped with MOODLE 2.x.

The author in collaboration with colleagues developed a number of electronic educational resources on "Regional Economics and Management" (Fig. 1), "Economic Geography" (Fig. 2), etc.

Figure 1
SCREENSHOT OF THE ELECTRONIC EDUCATIONAL RESOURCE “REGIONAL ECONOMICS AND MANAGEMENT” BY MALGANOVA I., MAKAROVA E

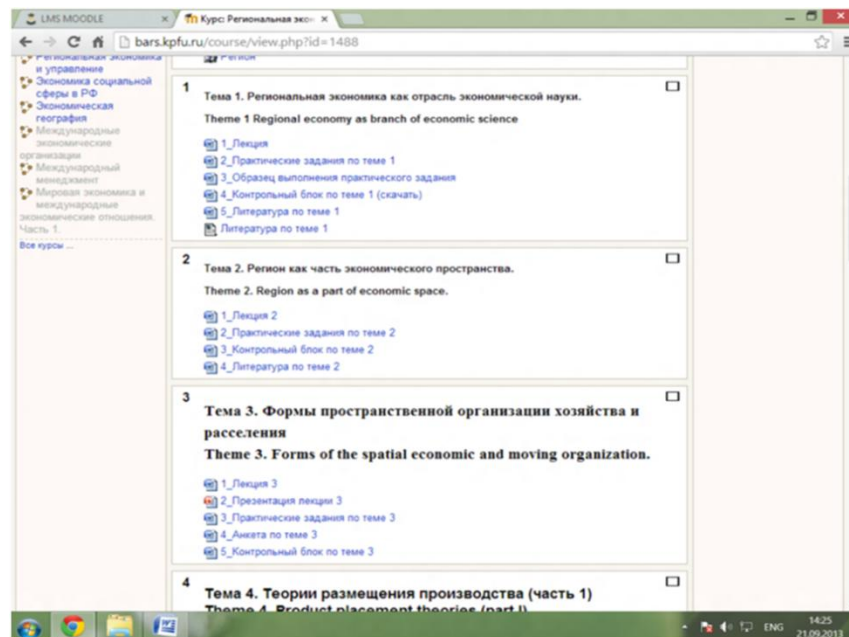
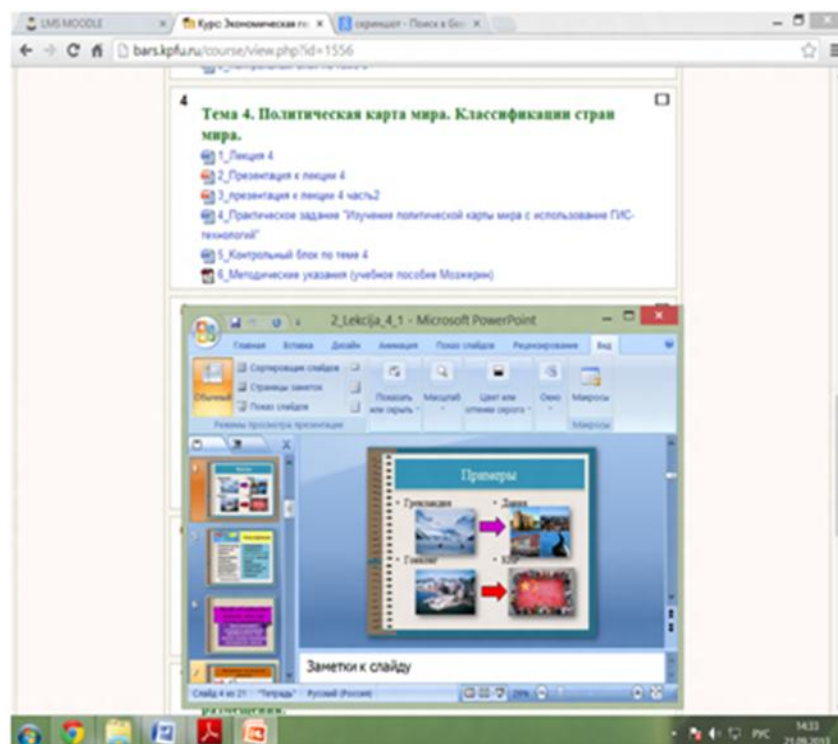


Figure 2
SCREENSHOT OF THE ELECTRONIC EDUCATIONAL RESOURCE “ECONOMIC GEOGRAPHY” BY MALGANOVA I., BUTOV G



The presented electronic educational resources were compiled on the basis of the E-learning practice using Moodle of leading universities.

RESULTS

The analysis of Moodle usage for teaching economic disciplines in the above mentioned universities revealed a number of peculiarities:

A. The simplicity, popularity and interactivity of LMS «Moodle» find a response among students from many universities. For example, the London School of Economics and Political Science of the University of London originally also used a commercial product (WebCT), however at the moment the transition to the Moodle system is practically completed, acting on a nonprofit basis. Of interest is the online market place MITOPENCOURSEWARE of Massachusetts Institute of Technology, which once again confirms the 1st place of the university in the Top-100 ranking. On the web-site 62 opened courses on Economics are available (among them 35 Bachelor courses, 27 – Masters).

In general, at universities the number of open courses for undergraduate studies ranges from 15 to 55, for masters from 10 to 46, although the concern is not the quantity but the quality of available resources. In virtually all 70 universities such classic economics courses as «Macroeconomics», «Microeconomics», «Econometrics», «Statistical Methods in Economics», etc. are presented of the 70 universities (from Massachusetts to the London School of Economics), 68% of educational establishments offer open courses of economics at the global level: «The World Economy», «International Economics», «International Trade», «International Finance», «International Political Economics». All these disciplines are used by students of KFU specializing in "World Economy" as an additional resource when preparing for a seminar on "Regional Economics and Management."

However, for the course on Regional Economics only one open access source was found, «Urban and Regional Economics» of the University of Toronto (Canada). From our point of view the reason is that the notion "region" in terms of globalization becomes a multi-scale concept. In Russia all 83 members of the Russian Federation are considered as regions, which are highly contrasted in terms of territory, administrative arrangement, population and economic potential (Moscow, Saint-Petersburg, the Sverdlovsk region, the Chechen Republic, Perm Territory, the Republic of Tatarstan, Chukot Autonomous Area, etc.). On the other hand, there are cross-border regions («Benelux», «Neisse», «SaarLorLux»), as well as world regions that have supranational institutions.

In general, the principles used in the LMS Moodle by foreign universities are transmitted to the experience of electronic educational sources introduction in regions of Russia and allow the provision of: multiple information representation; the interactivity of the education; multiple repetition of the studied material; the creation of an always-on reference system; effective control of studies; privacy of education; conformity to the principles of effective studying.

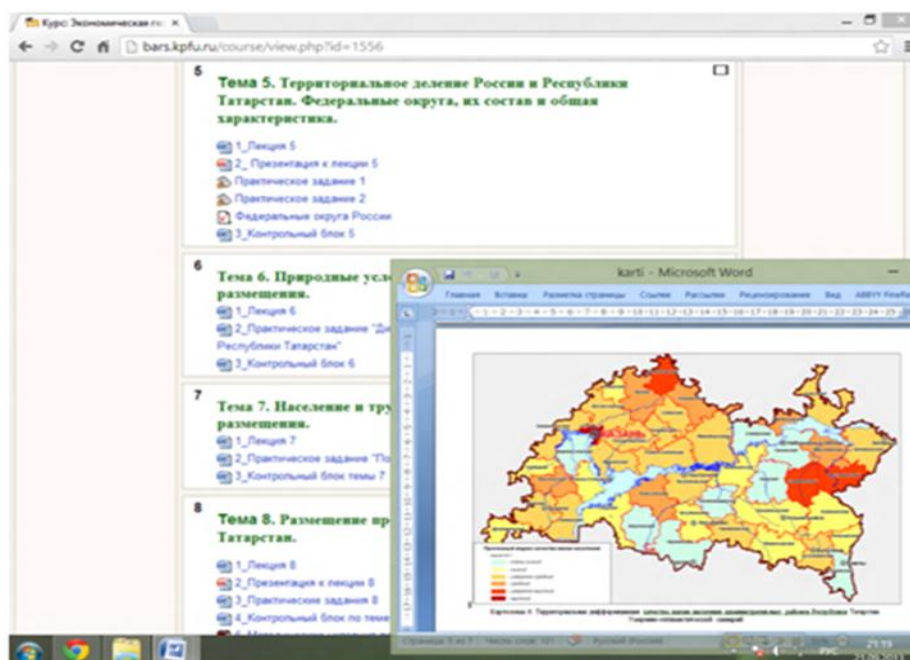
B. Pluggable language packs allow the achievement of complete localization; nowadays 43 languages are used in Moodle. The scientific group of KFU plans to develop an electronic educational source in the Tatar language. 36% of all Tatars that live in Russia are residents of the Tatarstan Republic, the rest are scattered in 30 regions of Russia. The total amount of Tatars is about 8 million people.

C. Within the electronic educational resource "Economic Geography" students attending this course also have an opportunity to use geo-information systems (MapInfoProf.7.5) for developing thematic base maps (Fig.3). The usage of geoinformation systems is caused by the

interdisciplinarity of the “Economic geography” course. Map development and geographical analysis are not of a recent origin. However hybrid technology provides a modern, more effective, graphic and fast approach to the analysis and solution of problems facing humanity as a whole and economic organizations or groups of economists in particular. It automates the procedure of the analysis and prognosis.

Figure 3

A BASE MAP. TERRITORIAL DIFFERENTIATION OF THE POPULATION’S QUALITY OF LIFE IN ADMINISTRATIVE REGIONS OF TATARSTAN REPUBLIC. MODERATELY OPTIMISTIC SCENARIO



Due to the use of hybrid technology in electronic educational resources, students can: have an idea of hybrid technology, the process of their development and work with electronic maps; create economic data bases for any region and work with them; know the main aims of hybrid technology and the possible use of them in different economic spheres; learn to work with hybrid technology software.

CONCLUSIONS

In the work general opportunities were outlined, available for the professors compiling courses in Moodle of the universities under study, as well as of the Kazan Federal University: the possibility of having online study materials; the usage of the sources both in full-time and part-time attendance; the opportunity to create bridging programs, in which the syllabus is defined by the end of the academic activity; the capacity of monitoring the process of education and work individually with each student; the possibility of exchanging study courses with other professors working in Moodle.

Social aspects: The authorial courses presented in the work allow students to study at convenient but limited times (this is very important for disabled-students and those who missed classes through illness, etc.). Moreover, students have an opportunity to create educational

audio/video resources in several languages (Russian, Tatar, and English) in coordination. This leads to the development of creative and research activities of students in a multicultural region. The experience of leading universities in the usage of the given LMS lets us take into account both its social and technical aspects: in Moodle it is possible to develop, edit and review teaching material in combination between a professor and a student. Joint creativity provides scientific progress.

CONCLUSION

A survey conducted among first-year students of the Institute of Management, Economics and Finance studying “Economics” (groups 7331-1, 7331-2, 7331-3; 91 students) showed that despite not using electronic educational services in the schools of 93% of responders, students have a positive attitude towards the usage of the LMS Moodle in their studies (94% were “for”, 6% - had no information). 82% of those questioned would be happy to use open access courses of the world’s leading universities while preparing for their practical classes and independent works (12% have a language barrier).

The flexibility, interactivity, educational cooperation and social importance of the electronic educational resources should be supported by the openness of professors that introduce their courses to Moodle, and the motivation of students to advance their educational level by all accessible, effective and modern means.

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ALGORITHMS OF PARAMETRIC ESTIMATION OF POLYNOMIAL TREND MODELS OF TIME SERIES ON DISCRETE TRANSFORMS

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ABSTRACT

A forecasting of economic and financial indicators is the actual problem of strategic management. A time series forecasting often uses simple econometric models. The trend and seasonal trend models are among the popular models for forecasting. In some cases researchers need to analyze vector time series. The traditional algorithms of estimating time series models may be associated with a sufficiently high computational complexity. We propose the applications of oblique discrete Walsh transform to the synthesis of estimation algorithms of polynomial trend models' parameters of time series. Algorithms evaluate polynomial models that not above the third degree in a non-orthogonal basis of discrete exponential functions and orthogonal basis of discrete Chebyshev polynomials. The advantage of these algorithms is the computational efficiency, which associated with a significant reduction of the multiplicative complexity of algorithms in comparing with direct estimation of polynomial trend models.

Key Words: *Time Series, Polynomial Trend Models, Parametric Estimation, Discrete Transforms, Oblique Discrete Walsh Transformations*

INTRODUCTION

Time series analysis and forecasting are the actual problems of finance, marketing, strategic planning and management. In the strategic management the most actual problem is forecasting strategic competitiveness of company. In the aim of solving this problem analytics need to forecasting financial and economic indicators of companies and markets. The main researches use one of two ways for analysis and forecasting time series: parametric and nonparametric econometrics. The parametric approach often bases on one-dimensional time series models as trend and seasonal trend models, ARMA and ARIMA. The nonparametric approaches use modern ways of analysis and forecasting as neural network, fuzzy logic etc. These methods also show high efficiency on financial markets.

An effective solution to a wide range of applications of time series analysis (TSA) is bases on the use of discrete transformations (DT). These transformations are the acknowledged tools for creating computationally efficient algorithms for solving problems of time series analysis (fast algorithms, algorithms with a reduced computational complexity of algorithms with balanced computational complexity).

In TSA, the discrete orthogonal transformations (DOT) are widely used in the different orderings of discrete Walsh functions (DWF). We propose a number of generalizations of DWF systems including the oblique ways. Among the oblique DWF should be noted discrete systems of inclined Walsh functions and piecewise exponential functions. These generalizations of oblique discrete Walsh systems are bases on the systems of orthogonal and non-orthogonal Rademacher functions. In introduced the oblique systems of discrete functions entitled "discrete

bases of piecewise exponential functions". However, these can be build using the shifted inclined Rademacher functions, and we presume should be call as «discrete bases of shifted inclined Walsh functions". For brevity, we will use the name for these bases "oblique discrete Walsh bases".

In the frame of this work, we realize under the DT is the transformation introduced by multiplying a vector by a matrix whose rows are the basis vectors of an orthogonal or oblique discrete basis with $N = 2^n$ dimension:

$$\mathbf{F} = \mathbf{B}_N \mathbf{f},$$

where $\mathbf{f} = \{f(i), i = \overline{0, N-1}\}^T$ - N - dimensional time series vector; $\mathbf{F} = \{F(i), i = \overline{0, N-1}\}^T$ - N - dimensional vector of coefficients DT.

In this work, we develop efficient (computationally) algorithms for parametric estimation of polynomial trend models of time series based on the oblique DT.

TREND MODELS OF TIME SERIES

Effective application DT is in the creating time series models for solving problems of analysis and forecasting. Many problems of TSA have deal with regular time series (TS). In the analysis of time series structures often take the typical model in the form of an additive sum of four components: trend, seasonal fluctuations, cyclical component and random component. Frequently, depending on the particular situation the truncated models are used. Thus, some applications limited to using the form model:

$$f(j) = p(j) + \varepsilon(j), \quad j = \overline{0, N-1},$$

where $p(j)$ - trend (function deterministic trend); $\varepsilon(j)$ - stationary random component.

The task of allocation trend, in which it reduces to identify the class of adequate models, is important in many TSA applications. Among these time series processing tasks may be noted the problem of identification, smoothing, extrapolation, components extraction and spectral analysis of time series. This is because in TSA tasks the time series is divided to the components and further the components are studied. Even when a trend in itself is not of interest, it is necessary to study the allocation of the spectrum at higher frequencies. Many researchers have noted the importance of taking into account the trend in the spectral analysis of time series. In recommend taking into account the trend at all stages of the analysis. There are also methodical guidelines of another nature. For example, in case when the decision on removal of the trend is made on the selection of the researcher, this case also assumes that in the procedures of the time series analysis must be phase of analysis of trend.

The task of trend determination is important in the construction of regression models based on data as TS. It is necessary to take into account the presence or absence of stochastic (non-deterministic) trend in the analyzed series and set the class of each of the series. There are two classes of TS:

- 1) TS (trend stationary) series - stationary relative to the deterministic trend;
- 2) DS (difference stationary) series - the series with a stochastic trend (perhaps with a deterministic trend) and leads to a stationary form only by a single or k -fold differentiation.

As a mathematical model trends usually use parametric models in the class of polynomial, harmonic, polyharmonic and exponential functions, spline and spline-like models. However, in cases where the time series has no obvious trend or character of the trend may

changes over time, researchers use the smoothing methods based on the low-frequency digital filtering. Method of non-recursive polynomial filtering is widely spread. Smoothing method for the isolation of trends must be used with caution; in some situations, it may not be appropriate due to distortion of residual time series component. Note that the methods of allocation of the trend based on piecewise polynomial approximation structures (spline and spline-like models) represent a compromise between the method of filtering and the polynomial model (PM) trends.

In practice, describing of the polynomial model uses a finite degree of discrete power function. Polynomial trend models are often limited by small degrees (no more than the third) and parameter estimation uses method of least squares (OLS).

PM TS trends can be described in two ways: in the basis of discrete exponential functions and in the basis of discrete Chebyshev orthogonal polynomials. PM trend k -th degree in the basis of discrete exponential functions given by

$$f(j) = \sum_{i=0}^k a_i j^i, \quad j = \overline{0, M-1}.$$

An expansion of a system of orthogonal polynomials of a discrete variable $\{p_M(i, j), i = \overline{0, k}, j = \overline{0, M-1}\}$ introduces the orthogonal PM with k -th degree on a regular grid in form:

$$f(j) = \sum_{i=0}^k C(i) p_M(i, j), \quad j = \overline{0, M-1},$$

$$C(i) = (1/d_i) \sum_{j=0}^{M-1} f(j) p_M(i, j);$$

where

$$d_i = \|p_M(i)\|_2^2 = \sum_{j=0}^{M-1} p_M^2(i, j).$$

This expansion determines the result of the approximation of the time series vector, the optimum in terms of the OLS criterion. It uses discrete polynomials on a regular grid, orthogonal with unit weight function - a discrete Chebyshev polynomials (DCP).

EVALUATION OF POLYNOMIAL TREND MODELS BASED ON DISCRETE MOMENTAL TRANSFORMATIONS

The classic algorithm for estimating the PM trend by OLS is associated with the calculation of the components of vector of the initial degree moments (hereinafter just moments) of time series vector (method of normal equations of the right side of the system), which we denote $\mathbf{m} = \{m_i, i = \overline{0, k}\}^T$. The i -th moment of the order given by the formula:

$$m_i = \sum_{j=0}^{M-1} j^i f(j).$$

Solution of the normal equations at low degrees of PM is the explicit formula for calculating the estimated coefficients. The formulas for calculating the coefficients of the third degree of PM in the compensation form (the coefficients of higher orders) using the results of the discrete moment transform are as follows:

$$a_0 = w_0 m_0 - \frac{(M-1)}{2} \cdot a_1 - \frac{(M-1)(2M-1)}{6} a_2 - \frac{M(M-1)^2}{4} a_3 - \frac{(3M-1)(3M-4)}{10} \cdot a_3$$

$$a_1 = w_1 \cdot ((M-1)m_0 - 2m_1) - (M-1) \cdot a_2 - \frac{3(M-1)}{2} \cdot a_3$$

$$a_2 = w_2 ((M-1)(M-2)m_0 - 6(M-1)m_1 + 6m_2) - a_3 = w_3 ((M-1)(M-2)(N-3)m_0 - [4 + 6(M-1)(2N-3)]m_1 + 30(M-1)m_2 - 20m_3)$$

where w_0, w_1, w_2, w_3 - weighting coefficients of the form:

$$w_1 = 1/M, \quad w_1 = -6/(M(M^2 - 1)), \quad w_3 = -140/(M(M^2 - 1)(M^2 - M - 6)(M^2 + M - 6)).$$

$$w_2 = 30/(M(M^2 - 1)(M^2 - 4)),$$

The algorithm uses a discrete momentary transform of the time series vector and it contains the main computational costs. Direct algorithm for computing the moments characterized by the following estimates of the computational complexity (excluding the cost of generating power functions): $Ad = (k+1)M - 2k - 1$, $Mu = k(M - 2)$.

Reducing the complexity of the procedure of calculating the moments can be achieved by using a recursive algorithm that does not require multiplication for its realization. However, in case of calculated moments above two, the additional complexity of recursive algorithm is significant and exceeds the total number of basic arithmetic operations of direct algorithm. We note also that the recursive algorithm has a smaller numerical tolerance for the faults of rounding and requires the full sample of time series to the start time of the calculations. Sometimes this can lead to a delay the time of issuing calculation results that is often unacceptable for time series processing in real-time mode.

For the effective (computationally) algorithms of the PM coefficients assessment can use the spectral approach, based on the orthogonal discrete transforms of time series vector. In studied and developed this approach to the synthesis of algorithms for estimation of PM's coefficients. The main results of this work relates to the synthesis of OLS estimation algorithms (when $M = 2^n$) based on the traditional Walsh transformation. These algorithms have practical importance as the effective implementation of binary arithmetic tools. At low degrees of PM these algorithms can reduce the multiplicative complexity compared to direct algorithms. The development of the spectral approach was in, where were the issues of synthesis algorithms for estimating the PM by OLS and its generalizations on the basis of transforms in the Walsh-like bases of piecewise polynomial functions. Orthogonal PM trends can also be constructed using generalized orthogonal discrete Walsh transforms that introduced in. These results are of general nature and synthesize algorithms with different complexity characteristics as in a one-dimensional and multi-dimensional formulation. Further DT generalizations use discrete Walsh functions for the synthesis of the considered class of algorithms.

ESTIMATION OF POLYNOMIAL TREND MODELS BASED ON THE DISCRETE OBLIQUE WALSH TRANSFORMS

Let us introduce an approach to the parametric estimation of PM trend of time series based on discrete transformations of orthogonal and oblique (non-orthogonal) generalizations of

Walsh functions. Further for such DT generally will stick to the name discrete Walsh transform (DWT), implying a generalized discrete transformations as orthogonal and oblique ways. We restrict ourselves to the consideration of the one-dimensional case.

Let \mathbf{f} - N -dimensional time series vector. We put him in the line N -dimensional ($N = r_1 r_2 \dots r_n, N \geq M$) advanced time series vector $\mathbf{f}^* = \{\mathbf{f}, \mathbf{0}_{N-M}\}^T$, where $\mathbf{0}_L$ - L -dimensional zero vector.

Obviously, the initial degree of time series points and the extended time series vectors are equal. This allows recording the classic vector-matrix ratio to calculate the vector of parameter $\mathbf{PM} \mathbf{a} = \{a_i, i = \overline{0, k}\}^T$, where $k \in \{0, 1, \dots, r_{\min}\}$, $r_{\min} = \min\{r_i, i = \overline{1, n}\}$ by OLS in the following form:

$$\mathbf{a} = (\mathbf{X}_{M, k+1}^T \mathbf{X}_{M, k+1})^{-1} \mathbf{V}_{k+1, N} \mathbf{F},$$

where $\mathbf{X}_{M, k+1}$ - matrix of independent variables (structural matrix) of the form

$$\mathbf{X}_{M, k+1} = \begin{vmatrix} \mathbf{x}_{k+1}(0) \\ \mathbf{x}_{k+1}(1) \\ \vdots \\ \mathbf{x}_{k+1}(M-1) \end{vmatrix},$$

$$\mathbf{x}_{k+1}(i) = (i^j, j = \overline{0, k}),$$

$\mathbf{V}_{k+1, N}$ - matrix of weighting coefficients;

\mathbf{F} - DT extended vector of the time series vector.

Values of i -th rows elements of the matrices can be determined using analytical descriptions of the properties of discrete power functions lower than i -th order using Walsh functions.

This transform of the time series vector equals to the basis vectors, which the right truncated to dimension M . The possibility of constructing estimation algorithms for random dimension time series vector of smaller dimension of DWF significantly expands the tools of algorithmic parametric identification of PM. This creates favorable conditions for the widespread introduction of the PM assessment algorithms based on the DWF in the practice of processing digital data.

Obviously, in terms of feasibility, special attention should be paid to the use of DWT in dimension $N = 2^n$. Let us more detail on the algorithms for estimating the PM of the third degree inclusive, using the oblique discrete Walsh transforms (ODWT).

The results of synthesis of algorithms estimating the PM is lower than the second degree of the trend by ODWT in the basis of discrete power functions are presented in. However, in not point at the advisability of using oblique version of the discrete Walsh-Hadamard transformation. This is because fast algorithms of these transformations are the most rational in complexity of realization among different transformation algorithms for ordered oblique systems of discrete Walsh functions in dimension $N = 2^n$. In this case, the formula for estimating the coefficients of the PM of the third degree is as follows:

$$a_0 = w_0 S_0^{(0)} - \frac{(M-1)}{2} \cdot a_1 - \frac{(M-1)(2M-1)}{6} a_2 - \frac{M(M-1)^2}{4} a_3,$$

$$a_1 = w_1 \cdot ((M-1)S_0^{(0)} - 2S_1^{(1)}) - (M-1) \cdot a_2 - \frac{(3M-1)(3M-4)}{10} \cdot a_3,$$

$$a_2 = w_2 \cdot ((M-1)(M-2)S_0^{(0)} - 6(M-1)S_1^{(1)} + 6(S_1^{(2)} + 4S_2^{(1,1)})) - \frac{3(M-1)}{2} \cdot a_3,$$

$$a_3 = w_3((M-1)(M-2)(M-3)S_0^{(0)} - [4 + 6(M-1)(2M-3)]S_1^{(1)} + 30(M-1)S_1^{(2)} + 4S_2^{(1,1)} - 20(S_1^{(3)} + 6S_3^{(2,1)} + 48(1-\delta_{n,2})S_3^{(1,1,1)})),$$

where

$$S_0^{(0)} = F(0); \quad S_1^{(k)} = \sum_{\mu=0}^{n-1} 2^{k\mu} F(2^\mu), k = \overline{1,3};$$

$$S_2^{(1,1)} = \sum_{\mu_1=0}^{n-2} \sum_{\mu_2=\mu_1+1}^{n-1} 2^{\mu_1+\mu_2-1} F(2^{\mu_1} + 2^{\mu_2});$$

$$S_2^{(2,1)} = \sum_{\mu_1=0}^{n-1} \sum_{\substack{\mu_2=0 \\ \mu_2 \neq \mu_1}}^{n-1} 2^{2\mu_1+\mu_2-1} F(2^{\mu_1} + 2^{\mu_2}) = \sum_{\mu_1=0}^{n-2} \sum_{\mu_2=\mu_1+1}^{n-1} (2^{2\mu_1+\mu_2-1} + 2^{\mu_1+2\mu_2-1}) F(2^{\mu_1} + 2^{\mu_2}),$$

$$S_3^{(1,1,1)} = \sum_{\mu_1=0}^{n-3} \sum_{\mu_2=\mu_1+1}^{n-2} \sum_{\mu_3=\mu_2+1}^{n-1} 2^{\mu_1+\mu_2+\mu_3-3} F(2^{\mu_1} + 2^{\mu_2} + 2^{\mu_3})$$

Consider the problem of synthesis of algorithms for calculating the coefficients of the expansion in the basis DCP dimension M, which is lower than the third degree using by ODWT in dimension. The explicit form of the formulas for calculating the coefficients of the expansion at low degrees of DCP easy to obtain based on their analytical descriptions in a power function. The resulting formula for calculating the coefficients of the expansion by DCP not higher than the third degree without taking into account the normalization operations can be written in the following form:

$$C(0) = S_0^{(0)}, \quad C(1) = (M-1)S_0^{(0)} - 2S_1^{(1)}, \quad C(2) = (M-1)(M-2)S_0^{(0)} - 6(M-1)S_1^{(1)} + 6(S_2^{(1)} + 4S_2^{(1,1)})$$

$$C(3) = (M-1)(M-2)(M-3)S_0^{(0)} - [4 + 6(M-1)(2M-3)]S_1^{(1)} + 30(M-1)S_2^{(1)} + 4S_2^{(1,1)} - 20(S_3^{(1)} + 6S_3^{(2,1)} + 48(1-\delta_{n,2})S_3^{(1,1,1)}),$$

Where $S_k^{(v)}$ - values, which were given above in the description of the algorithm of estimation of PM in the basis of discrete power functions.

The resulting algorithmic solutions can be effectively used for the estimation of non-linear models of other classes' trends. Here are some non-linear models in estimating trends, which can be effective for PM estimation algorithms based on ODWT. These trends are non-linear models, which reducible to polynomial with discrete degree. Information about such non-linear trends is in the table.

Table 1

Dependence	Conversation	Linearized dependence
$y = ab^t$	$Y = \ln y$	$Y = \ln a + bt$
$y = e^{a+bt}$	$Y = \ln y$	$Y = a + bt$
$y = \frac{1}{a+bt}$	$Y = 1/y$	$Y = a + bt$
$y = (a+bt)^2$	$Y = \sqrt{y}$	$Y = a + bt$
$y = ab^t c^{t^2}$	$Y = \ln y$	$Y = \ln a + t \cdot \ln b + t^2 \cdot \ln c$

In carried the comparative analysis of the computational complexity of algorithms for calculating the PM trends of time series, which not higher than the second degree based on DT. An analysis of the computational complexity of algorithms for estimating the PM of low degrees shows the following. A sharp decline in the multiplicative complexity with some increase in the additive complexity is in higher degrees of the time series vector comparing with the traditional direct algorithms. However, the total amount of basic arithmetic operations in these algorithms is

less than in the direct algorithm. So ODWT based algorithms have a relatively high computational efficiency than algorithms based on orthogonal DPU. This is because ODWT has a low computational complexity. This algorithms are not use the subtraction and reduce computational cost on the generation of the weighting factors and if the generation was in tabular manner, algorithm uses constant volume of the storage device. At higher degrees of time series vector the memory savings is quite large (the amount of permanent storage device determined by the number of multiplications).

CONCLUSION

This study shows that the developed algorithms for estimating the PM of time series trends by OLS have the computational efficiency. The use of these algorithms will speed up the solution of the problem of extraction trends of certain classes and detrending time series. This algorithms orient for efficient hardware implementation of a binary arithmetic means. This is mainly due to the relatively low computational cost for the implementation of fast algorithms truncated ODWT and the possibility of replacing the multiplications for the integer degree of two by binary shift operations.

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COMPREHENSIVE ASSESSMENT OF THE RELIABILITY OF THE BANK WITH THE APPLICATION OF STATISTICAL METHODS

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ABSTRACT

Russian banks are forced to work in conditions of high risks and often find themselves in crisis situations. This is due to inadequate assessment of their own financial situation, attracted and placed funds, the reliability and stability of clients. The indicators used for the characteristic of activity of banks, should assess the reliability and efficiency of work.

The article gives the reliability prediction of commercial Bank by using statistical analysis methods. Reliability analysis of a commercial Bank is to calculate various indicators of banks ' financial condition based on data from its financial statements, which allow to receive representation about the basic performance of the Bank using regression, correlation, cluster, factor analysis. Different methods and approaches that have been proposed by Russian authors for the analysis and assessment of reliability of commercial banks, testify to the importance of this problem. The authors in the work of the Bank's reliability is meant the probability that the Bank's operations for some period of time to meet certain criteria, i.e. the probability that the Bank will manifest itself as a reliable. The author used General scientific methods: analysis and synthesis, comparisons, generalizations, system approach. In the process of the actual study material used methods of economic and statistical analysis. As a result the main tendencies, problems of reliability of the banking sector.

Key Words: *Reliability, Statistical Methods, Forecasting, Mathematical Model of Indicators of Banks, Financial Condition*

INTRODUCTION

Currently the banking system of the Russian Federation subject to serious modifications and the main problem is the stability and reliability of commercial banks. The financial crisis has exposed the deficiencies and inconsistencies of the management practices of commercial banks. As a result, some banks suffered losses, and some went bankrupt.

To date, there are different points of view on the economic content of the concept of "reliability" of a commercial bank. So, V.V. Ivanov believes that the reliability seen in the performance of their obligations, as well as equals and reliability of the bank's creditworthiness. O.B. Nesterenko, A. Buzdalin, A.A. Novikov is meant by a comprehensive assessment of the reliability of the bank that meets certain criteria for a certain period of time. Generalizing all interpreted by the author's opinion, it can be concluded that the reliability of a commercial bank depends on its stability. These concepts should not be in opposition.

Reliability analysis of a commercial bank is to calculate various indicators of the financial condition of banks on the basis of its financial statements, which provide an overview of the main results of the Bank by means of regression, correlation, and cluster and factor

analysis. However, the practical application of methods focused on the detection of the current problems of the banks and do not have important predictive purposes and neglected depending on the reliability of individual banks on the financial stability of the banking system as a whole.

The Purpose of the Work

The aim of the work is to study the concept of "reliability", and considering the application of statistical methods of analysis and forecasting for finding the reliability of OJSC "AK BARS" Bank.

The paper addresses the following tasks: review of the Russian banking system, a place of "AK BARS" Bank in her study of the concept of "reliability", analysis of the main trends and factors of reliability of commercial banks, the choice of the basic methods of analysis and prediction of the reliability of OJSC "AK BARS" BANK calculations to determine the reliability of the bank.

METHODS

In modeling the socio-economic dynamics objectively have to deal with multifactorial dependencies.

Multi-Factor Model:

$$\hat{Y} = f(x_{it}) \quad (1),$$

where Y_t - the projected figure,

x_{it} - factors affecting the indicator

Linear multifactor model has the form:

$$\hat{Y}_t = a_0 + a_1 x_{1t} + a_2 x_{2t} + \dots + a_{it} x_{it} + \dots + a_{nt} x_{nt} \quad (2)$$

In order to build such a model, you must first select the factors that have the greatest impact on the resulting indicator. It is necessary to select the most significant of them using correlation analysis.

Correlation analysis serves only an additional tool for studying the relationship between the factors, since the main factor correlation analysis - the coefficient of pair correlation - characterizes the degree of approximation of dependence between two random factors in linear form. In the linear multivariate model the task of assessing the extent to which the relationship between the factors is approximately linear.

For the advanced detection of troubled banks using factor analysis - statistical analysis, which helps to identify the minimum number of factors.

RESULTS

In our study, in order to find a comprehensive assessment of the reliability of the bank were taken the following factors for the 10 largest banks in Russia: cash bank (x1), total assets (x2), total liabilities (x3), the share capital (x4), means a credit institution in CBR (x5), due from

credit institutions (x6), issued debt (x7), net loans (x8) and general safety factor (x9) (as described in the specification is Kromonova CBR "Capital adequacy" (H1)).

All calculations were carried out in the application program Statistica. As a result of the method of principal components 8 major components formed two main components: f_1 (composed of x1, x2, x3, and x5) and f_2 (composed of x4, x6, and x7). The analysis found that for the 10 largest banks in the value of the deposit makes the component f_1 , total liabilities characterize the sources of funds, they determine the direction of the use of resources, and cash assets (f_2) characterize the investment funds available in the bank's financial transactions. If we apply the results of our object under study, OJSC "AK BARS" Bank, the Bank for 2015 held a leading position in the field of lending.

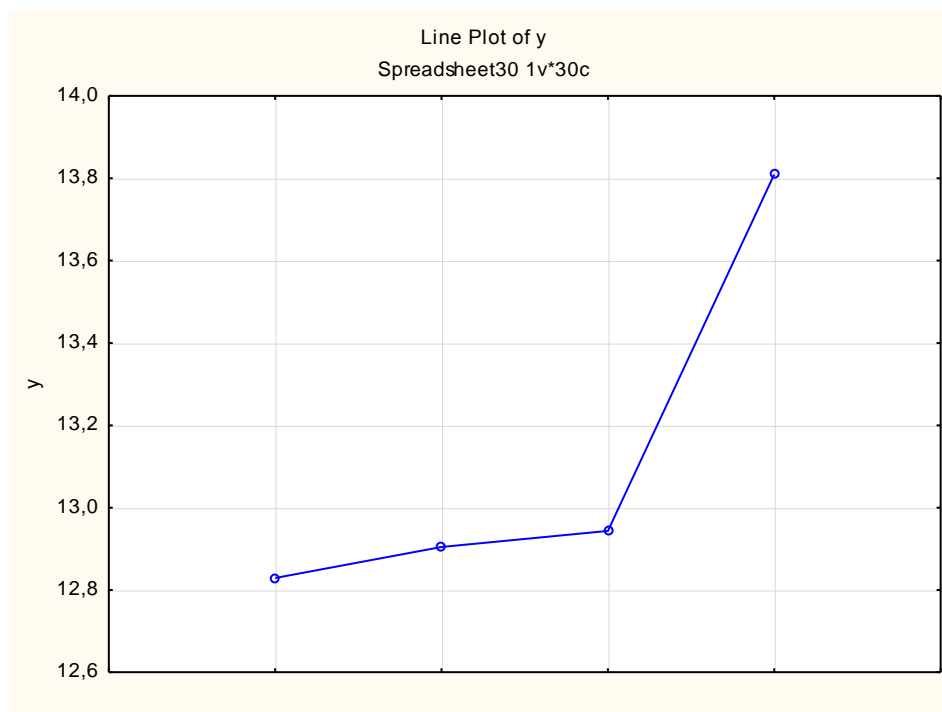
The analysis found that in 2015 for the 10 largest banks in Russia the greatest value on the contribution to the total dispersion was the first principal component f_1 . Her explanation was attended 5 of 8 original variables - x1, x2; x3; x5; x8. Had the greatest load - x1.

To identify common features of banks can be divided them into homogeneous groups that help us clustering method. As a result, 10 banks hearth-poured into 6 clusters. OJSC "AK BARS" Bank one cluster with the bank "Russian Standard", which is natural, since they occupy in terms of assets 20th and 19th places respectively.

Predicting the reliability of OJSC "AK BARS" Bank was conducted using the method of multifactor models. The result was a quantitative value equal to 12,8, which is as close to the general safety factor for Kromonov equal to 12,7.

As a result, it was concluded that for the next 2016 funds, the total assets, the share capital increase, and total liabilities decline slightly, which shows a slight easing in financial transactions on the foreign market.

Figure 1
PREDICTING THE RELIABILITY OF OJSC "AK BARS" BANK



Following the results of the analysis revealed that the OJSC "AK BARS" Bank reliable level "above average" (highlighting the main component in the group, together with the bank, it is better for some indicators). Bank earns the trust for the immediate future, as the final safety factor of 12,8.

DISCUSSION

Factors of affecting complex assessment of the reliability of the Bank, as a result, of the analysis the highest value on the contribution of the component containing the funds of the Bank, total assets, total liabilities amounts due to credit institutions.

To increase equity and improve the reliability of the Bank recommended increasing the share capital increase profitability by reducing costs. Despite a number of problems, OJSC "AK BARS" Bank every year above rises among the largest banks in Russia, and thus increasing its reliability.

Integrated use of multivariate statistical methods pos-will is not only to identify homogeneous in the financial condition of banks, which is important for the evaluation of competitiveness, but also to study objectively existing relationship between indicators of financial and economic activity of banks in peer groups.

The frequency of such research will follow the dynamics of the banking activities, based on which to build a forecast of the banking system as a whole.

In banking practice, further work is needed to improve the methods for constructing summary measure that would accumulate the main part of the information on changing economic conditions over time. Promising in this respect is the use of statistical methods of analysis, allowing doing a comprehensive study of the activities of commercial banks.

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THE TOOLS IMPROVING THE EFFECTIVENESS OF MANAGEMENT SYSTEM OF ENTERPRISE

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ABSTRACT

Modern economy requires adequate control systems at all levels, sectors of economy. Being the subject of commodity-money relations, having wide economic independence and responsibility for the results of its operations, enterprises should form such a management system which ensures them high efficiency of operations, competitiveness and sustainable position in the market. Increasing effectiveness of management is essential for improving final results.

Productivity of work of the enterprise depends on production efficiency of business products; therefore effectiveness of system of management of the enterprise depends on the used tools. The most effective instrument and the integral component of management is information system. The more information system is focused on real business challenges and conforms to the standard of business management the higher is its effectiveness. Thus, business management on the basis of process-product approach has to be exercised by means of the product-focused information system with every task realization and developed on the basis of the standard of management of the enterprise.

Key Words: *Reengineering, Information System, Business Challenge, Business Product, Business Process, Efficiency Indicators.*

INTRODUCTION

The tools improving management and cost-effectiveness of business activity are actual for all economic subjects in the market. At the same time the criteria of management effectiveness of enterprises in conditions of market economy are decisive. The tools to achieve effectiveness depend on the specifics of industry, market conditions. The enterprise itself determines what activities need to be improved and accept the appropriate methodology.

Reengineering is a process of fundamental rethinking and reconstruction of business; it converts all of the existing structures and embodies new ways of doing work. Business processes of enterprises are main business segments which provide for creation of added value and realized products. Business processes are allocated at all segments of enterprises, business objectives are defined by the major activities of products.

Modern enterprise is often considered not only as organizational structures as well as systems of interconnected business processes to achieve certain goals. This approach ensures the integrity of information. This makes it possible to increase the speed of transmission of operational information, to maintain a high level of data accuracy, to improve the quality of data and to optimize the effectiveness of the decisions taken.

METHODOLOGY

Modeling business processes allows temporarily abstract the structure of enterprises and to focus on its core tasks. This model must comply with the formalization of processes; identify the process disadvantages affecting the effectiveness; contain varying parameters and structural characteristics of the processes.

The enterprise management standard is a documented procedure of all processes, their relationships, rules of management decision-making and quality meters and the number of these processes (technical and economic indicators). The enterprise management standard developed on the basis of the process-product approach, describes enterprises as a system of interconnected business objectives. Thus produced for internal and external use products become links that unite business goals and business processes together and reflect the attitude of the company with the external environment.

The figures of effectiveness are quantitative characteristics of the process being studied to assess the performance of individual tasks, business processes and enterprises as a whole. The effectiveness indicator system is based on the analysis of business processes and tasks to be solved by them. As a result are determined important fields for enterprises in which are appointed indicators to be regularly measured.

Identification and analysis of key business processes are rather complicated, time-consuming and nevertheless are necessary. On the basis of comprehensive analysis of the activities of one enterprise that provides transport services, we identified the main business processes and a set of indicators by which can be determined its effectiveness characteristic for enterprises of this type:

1. implementation of road transport (traffic volume, traffic coefficient; traffic capacity factor; average traffic density);
2. provision of services for maintenance (costs per ruble of production);
3. Driving School (the result of provision of services for vehicle driving training, driving school costs for provision of driving instruction);
4. logistics (the cost of the creation and storage of stocks);
5. marketing (market size, market share, profitability of the channel of sales; the group indicator of competitiveness of goods);
6. finances (profitability of production, sales, capital);
7. accounting (cost of commodity products, balance sheet profit);
8. provision of human resources (average number per month; factors of turnover, staff retirement, staff stability);
9. provision of transport (utilization of mileage vehicles);
10. energy supply (savings in depreciation charge resulting in improved time of used equipment);
11. maintenance (factors of the installed equipment, intensity of used equipment);
12. information provision (degree of automation) and others.

Management of the systems of business tasks is based on an analysis of indicators of the effectiveness of their decisions or equivalently the technical and economic characteristics of the produced business products. On the basis of these indicators is carried out planning, organization, accounting and analysis of the company. The number of indicators depends on the management and every task has at least two types of the results of effectiveness time spent and cost of resources (financial, material, labor). Business processes also have their own parameters for estimation calculated by aggregating the values of parameters within their business tasks. Thus, allocation of the solved tasks and their results, analysis of the relationship between

business tasks based on business exchange of products allow us to construct the map of the relationship between the parameters of the business tasks. Designed according this method the card is one of the elements of the enterprise management standard.

Proper implementation of this system will provide a number of advantages: increase the company's control, competitiveness and quality of products and services, reduce costs, and make a company more customer focus.

The efficiency of any system problem arises naturally due to the need to save maximum resources of the system. In market economy is a problem for all economic systems is a priority.

The aim of use of an effective management system is in achieving high commercial results, using the latest achievements in accordance with the precise implementation of the chosen strategy.

However, it should be understood that the innovation and creation of an effective management system requires significant financial investments that can afford not all enterprises. It is known that the problem of allocated funds shortage and low efficiency of recruitment and use of investments are the main problems of enterprises. It is known that financial resources are not important elements of reproduction and are included in the enterprise management system, but they are also resource for enterprises in the field of modernization and innovation.

Effective management system should solve the following issues:

- modernization of material-technical base;
- introduction of resource-saving technologies;
- Optimization of costs and resources.

Each enterprise itself solved the issue on the choice of tools to increase the efficiency of management, depending on the specifics of the activities and characteristics of the established management system. However for any manager is important to realize that the greatest efficiency of administrative activity will be reached in the event of using of different methods in combination orienting on the goals and the enterprises development strategy.

RESULTS

On the basis of process approach is designed the system of management of the enterprise which in difference of the existing systems is focused on the effective solution of business challenges and management of business products of all segments of activity of the industrial enterprises.

Process approach consists in representation of activity of any organization in the form of the interconnected system of business processes in which the leaving element of one process will be transformed to the entering element of other process. When speaking about the process approach we mean first of all that management of process and each of work entering it (activity, sub process, process of the second or the subsequent levels or function) happens to application of special methodical receptions, there is enough well developed and allowing to exclude many mistakes.

Process approach reflects communication of the main functions of management: planning - definition is more whole than the uniform direction of efforts; the organization of activity - horizontal and vertical division of labor, distribution of powers and responsibility; motivation - combination of the organizational and personal purposes of workers; control - check of achievement of the objectives and updating of plans; binding processes: communications and decision-making.

Formation of system of management on the basis of process-task of approach requires allocation of business processes and business challenges.

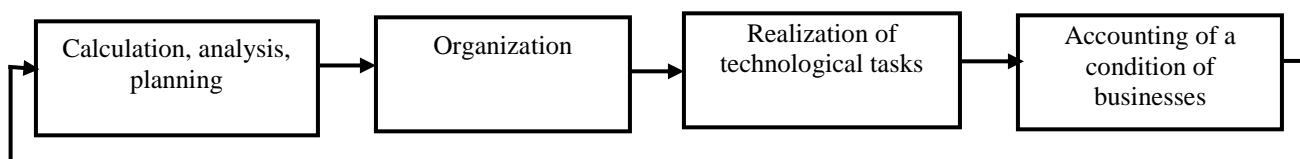
Allocation of business processes of the enterprise for the principles of completeness, determinancy, normalness, coherence, autonomy, resource intensity, efficiency, dynamism. For manufacturing enterprise the main business processes are: production preparation, main production, auxiliary production, material support, marketing, sale, finance, accounting, providing with a manpower, transport service, power providing, repair providing, social security, ensuring primary activity, information support, management.

For development of an effective enterprise of management system of business processes are presented in the form of set of elements. Solvable problems and the carried-out complexes of work can be basic elements of business processes. As the performed work can be considered as the solution of tasks in the subsequent concept of a task is used as making the business process element.

The manufacturing enterprise or the enterprise rendering any services is considered. For such enterprises there are standard business processes with rather unified scheme of realization. Generally the following business processes can be a part of concrete business process of the enterprise (multilevel numbering of business processes and their elements will be used further: the 1st level - instant No.; the 2nd level - No. of sub process (payment order); the 3rd level.

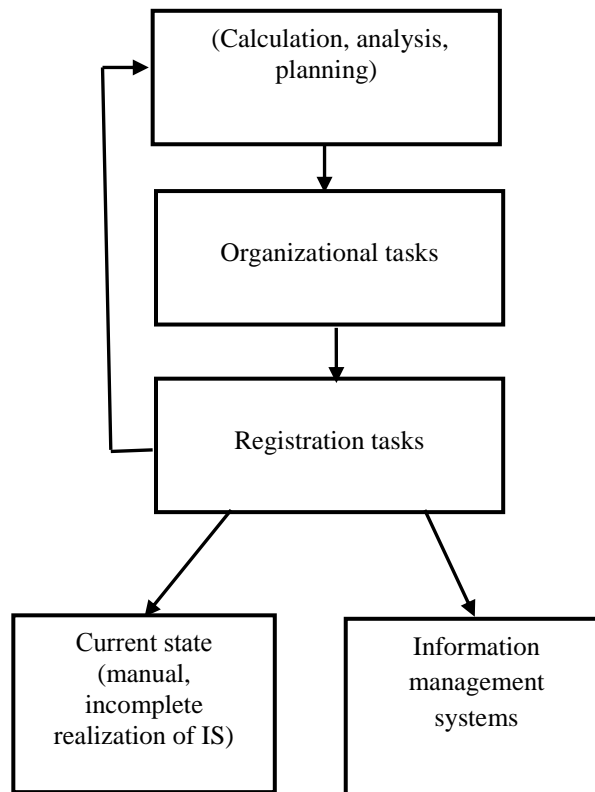
Allocation of business challenges of the enterprise on the basis of the same principles which are used for allocation of business processes. Business process includes four classes of business challenges: analytical, organizational, and technological and registration. The business challenge is the unique element of business process creating a business product (cost) and possessing eight properties (completeness, determinancy, normalness, coherence, resource intensity, efficiency, autonomy, dynamism). The business challenge is allocated owing to the fact that it is a point of emergence of expenses. Communication of business challenges of the enterprise is displayed in figure 1.

Figure 1
ORDER OF THE SOLUTION OF PROBLEMS OF BUSINESS PROCESSES



Communication of business challenges and information system of the enterprise is displayed in figure 2.

Figure 2
INTERRELATION OF TASKS AND REALIZATION OF IS



According to this document, process is defined as the set of interconnected and interacting kinds of activity transforming entrances to exits. Production which is grouped in four general categories is result of process: services, software, technical means and the processed materials. The established way of implementation of process is called procedure. Thus, today on hand business of analysts is available rich tools for the formalized description and the system analysis of business processes. The most widespread standard methodologies for modeling of activity of the organization and processes making it are: IDEF methodology, language of modeling of UML and architecture of information ARIS systems.

The method of reengineering of business processes has designed information infrastructure and information system as the tool of system of management of the industrial enterprise. According to purpose of information system of the enterprise its main objectives are defined: ensuring accurately integrated performance of functions of management of process at the enterprise and acceptance of an integrated solution on production control depending on a condition of internal and external environment.

The effectiveness of management is a complex economic category, study of which involves consideration of various factors that influence the management process. The effectiveness of enterprise management system depends on the instruments used. The most effective tool and an integral part of the management is information system. The more the information system is focused on real business problems and meets the standard of enterprise management, the greater is its effectiveness.

CONCLUSION

Process -task approach allows you to:

1. Develop effective management of the enterprise standards, continuous management, quality management;
2. Design, develop and implement a process-tasking information system, implement standard management;
3. Design, develop information and a mathematical model of the enterprise to study the most effective scenarios.

The effectiveness of the enterprise depends on the efficiency of the production of business products, hence the effectiveness of the company's management system depends on the instruments used. The most effective tool and an integral part of management is information system. The more the information system focused on real business problems and meets the standard of enterprise management, the greater is its effectiveness. Thus, management of the enterprise on the basis of process-product approach should be carried out by means of product-oriented information system task by task implementation and developed on the basis of enterprise management standard.

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CLASSIFICATION APPROACH IN DETERMINATION OF KNOWLEDGE IN CONTEXT OF ORGANIZATION

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ABSTRACT

The role of knowledge in developed countries is high. Scientific knowledge is the basis of the economy of the XXI century. Knowledge has become a new factor of production, the significance of which in competition will only increase.

In the scientific literature they write about knowledge as an important competitive advantage, strategic asset, but at the same time, it is extremely rare to find a clear definition of "knowledge". In scientific and business literature a large number of different interpretations of this definition are observed. In this article attempt to generalize the different points of view and to group them in approaches is made.

The following attributes of the concept "knowledge" were identified: quality, relevance and descriptive characteristics.

Analysis of the "knowledge" concept was conducted from the perspective of structural, integrated, systematic-informational, systematic-functional, systematic-genetic, and systematic and management approaches. On the basis of this analysis there was proposed the author's definition of the "knowledge" concept.

Key Words: *Management of Knowledge; Knowledge, Intelligence, Non-Material Resources, Economy of Knowledge*

INTRODUCTION

The intellectual component of labor plays fundamental role, which largely depends on the importance of organization, region or even a country in the world market. Examples of developed countries are Japan, Finland, and Germany. In the global ranking of competitiveness of countries, compiled annually by the World Economic Forum in 2012, Japan occupied the 10th place, Finland - 3rd place, and Germany – 6th. In comparison, Russia occupies 67th place in the ranking (Russia lags behind all countries of the BRICS). In all three countries there is a high proportion of products with high added value and substantial contribution of intelligence in its qualitative characteristics. "Made in Japan" or "Made in Germany" - in the consumer's mind is identified with high-tech products.

TEXT OF ARTICLE

The role of knowledge in developed countries is high. Scientific knowledge is the basis of the economy of the XXI century. Some researchers believe that the production of knowledge is the only sustainable source of economic growth. Traders on the stock markets prefer (when assessing the prospects of securities) knowledge to a greater extent than the material assets of the

organization. In 2011, Apple Inc. has become the most valuable company in the world. The market value of the company was \$ 506 billion.

Let's look at another example such as the bank Tinkoff Credit Systems. By rating ROE TCS it is one of the leaders of Russian banking sector. In 2012 the bank was №120 in the ranking of capital and №35 in the ranking of net profit. Impressive contrast of these two indicators, as well as the dynamics of the bank in the competitive space. The figures are shown in Table 1.

Table 1
POSITIONS IN RATINGS BANKI.RU

	profitability of net assets	net assets	profit	equity	profitability of equity
28.01.2012	19	107	35	105	6
28.03.2012	13	101	26	90	3
15.05.2012	14	102	22	88	3
07.07.2012	15	92	22	91	4
30.08.2012	18	87	24	76	3
26.09.2012	16	85	23	75	6
20.10.2012	15	79	21	75	6
17.12.2012	17	77	23	77	8
modification	+2	+30	+12	+28	-2

As you can see, the bank for three quarters seriously improved position almost on all ratings. As noted above, the contrast is noticeable between bank resources (assets and capital) and its performance (net profit, profitability of net asset rating).

Tinkoff, O., the owner of the bank, associates such success with focus of the organization on the formation of a strong analytical department and advanced information technologies. This bank is an innovative enterprise. A customer can do all transactions just by his phone or internet bank; the bank has no offices in the regions (only agency network) than it is remarkably different from the competition). The organization does not bear the costs of operations in offices and representative offices; customers are spared from having to stand in line.

These examples show that knowledge has become a new factor of production, the significance of which in competition will only increase.

In the scientific literature they write about knowledge as an important competitive advantage, strategic asset, but at the same time, it is extremely rare to find a clear definition of "knowledge". In dictionary of Economics edited by Azriliyan, A. the word "knowledge" is not represented. This is due to the fact that the determination is difficult to formulate.

Indeed, the word "knowledge" refers to one of the most ambiguous words in English language. Similarly, in Russian language the concept of "knowledge" has many interpretations. The authors have considered several hundreds of definitions. The variety of their content indicates that the term "knowledge" is a multi-faceted. A similar position is held by other researchers, for example and others.

It is important to note that knowledge is subjective. For example, amendments to the tax legislation can be practically nothing to the production staff, but may be critical for accountants, managers and owners of the organization.

In order to formulate and analyze the definition of "knowledge" it is necessary to consider its attributive space. Researchers outline the following attributes (properties, characteristics).

Quality (Compound Characteristic)

1. reliability (connects the reality and the content of information);
2. accuracy (measure of closeness of information) to reality;
3. completeness (reflecting the sufficiency or insufficiency of information);
4. correctness (form and content permit clear perception of information by consumers)

Demand

1. the value, usefulness (to what extent one can solve the problem);
2. relevance (reflecting importance, significance of knowledge at the moment);
3. cost (cost of production, price which a consumer is willing to pay).

Descriptive characteristics

1. carrier source (human material, or electronic media);
2. presentation (text, graphic, numeric, audio, video data);
3. volume (amount of information, data and knowledge measured in bits, bytes, kilobytes, and so on);
4. specialization (to which field it concerns).

The boundaries between the concepts of data, information and knowledge are difficult to determine, because these concepts are not well established, but on the other hand are closely linked. For example, the author of gives a comprehensive list of definitions for the concept of "information", but noted that the generally accepted definition is currently unavailable. According to the authors, knowledge is a broader and more complex concept than information and data. This view is shared by the authors and others.

The most interesting feature among mentioned above are value and usefulness. On the one hand, valuable knowledge, information and data bear research interest. On the other hand, signs of "value" and "utility" are common to all three concepts. Useful or valuable software, competence information, patents, technology, and even corporate culture, in the end add up organizational competitive advantage.

In the study, the authors examined the different definition of "knowledge" and identified specific approaches to definitions, the totality of which was classified according to the theory of systems:

The structural approach, system-element approach. Definitions, reflecting the internal structure and composition of the notion of "knowledge".

1. "Knowledge is the awareness of something or someone, and can include facts, data, information, description, skills".
2. "Knowledge consists of truths and ideas, concepts, judgments and viewpoints, methodologies and know-how. We accumulate knowledge, organize it, interpret and store for a long time, in order to apply it to solve specific problems and situations".
3. "Corporate knowledge includes know-how with respect to products, technologies, operating procedures and rules, as well as individual skills of each individual employee".
4. "Knowledge is somewhat more than data and information. Knowledge also includes beliefs, moral values, ideas and inventions, judgments, skills, professional knowledge, theory, rules, attitudes, opinions, past experiences".
5. Knowledge is a set of professional skills, abilities, experience and wisdom, business and personal contacts, which are used by people to achieve the objectives.

The approach considering the "knowledge" as a result of actions

1. Knowledge is the result of intellectual efforts, the absolute use of information in order to achieve a certain result. It may be extracted or generated from information only by logical deduction".
2. According to the Ozhegov's dictionary "knowledge is the result of cognition, scientific data, and the totality of information in any field".
3. "Knowledge is information that has been obtained by a person or group of people and processed them for distribution".
4. Any product of labor can be seen not only as a product, but also as means of production. In this way, you can also talk about the knowledge.
5. Knowledge is a product of social labor and mental activity of people, which is a perfect reproduction in the language form of objective, natural connections of practically transformed objective world.
6. Knowledge is a form of existence and systematization of the results of human cognitive activity.

Integrated, system-structural approach (takes into account not only the elements, but also their relationship).

1. "Knowledge is a combination of practical experience, individual values, contextual information, intuition of experts creating a basic framework for the evaluation and integration of new experiences and information. Knowledge appears and gains practical meaning in our minds. The organization of knowledge lies not only in the database, but also in the way of the organization, its processes and standards. Knowledge belongs to the employees and the organization".
2. "Knowledge is a constantly changing mix of structured experience, values, contextual information, and insight and is the basis for the assessment and assimilation of new experiences and information. It arises and is used in the heads of their carriers. The organization of knowledge exists not only in documents or repositories but also in established policies, processes, practices and norms".

"Knowledge" as ability or skill

1. Knowledge is the ability to make effective decisions and do the right conclusions based on the information and find trends.
2. Knowledge (know-how), human experience is a deep understanding of the subject and use the available data to assess new information. Knowledge works intuitively, allowing people to understand the situation and make quick decisions.
3. Knowledge is a set of skills, abilities, experience and wisdom, business and personal contacts, which are used by people to achieve the objectives.

The approach considering the "knowledge" as a system factor of the organization (economic advantage, unique factor, power).

1. J. Welch noted that "the ultimate source of our competitive advantages is the desire and ability of an organization to learn and quickly convert knowledge into action". Here is emphasized that not knowledge itself is valuable, but the ability to quickly apply it in practice. The same thought was expressed by Archangelsky, G. in audiobook "Drive Time": "Knowledge itself is not a value. Value is the knowledge embedded in practice".
2. "The essence of the company is its ability to create, transfer aggregate, integrate and exploit knowledge".
3. "Knowledge distinguishes one business from another, does not give rapid reproduction. This is a sustainable competitive advantage".
4. Knowledge has become a strategically important asset. Organizations increasingly attribute it to the intangible assets; many of them even believe that its value is higher than the tangible assets, including financial assets.
5. Organizational skills are strategic resources.

The system-information approach, information approach

1. "Knowledge includes information but referees it to the context of judgment and understanding".
2. Knowledge is the information based on which, with logical reasoning, one can obtain certain conclusions. Knowledge is the result of proven practice cognition of reality, its reflection in the human mind.
3. Knowledge is information that has been obtained by a person or group of people and processed them for distribution.
4. Negentropy concept, antithesis of entropy.

Systemic-functional approach. Used for system in terms of its behavior in the environment to achieve the goals.

1. "From the view point of view of the purpose, knowledge is the intelligence used in the work. Knowledge that is not used becomes obsolete. And the knowledge that is exchanged and distributed is generating new knowledge. Knowledge is seen as a strategic resource"
2. Organizational skills are strategic resources
3. Knowledge is the basis for decision-making management. Knowledge is the basic laws of the field, allowing a person to solve specific industrial, scientific and other tasks, as well as decision-making strategies in this area

Thus "knowledge" is often regarded as specially treated information. The word "information" often appears in the above definitions.

It should be noted that knowledge is sometimes considered as morals, opinions, judgments, education, that are some qualities of specific people, their individual properties.

Almost every aspect of knowledge can be formalized in the information or data. And the reverse transformation is also possible. Thus, the information and data is core of knowledge. Knowledge is a complex and multifaceted concept. We also identified that the basic properties of knowledge are value and usefulness to achieve practical results.

Thus, we come to the following definition:

Knowledge is a complex organized (organized in a certain way) information that a person enables or organization efficiently do their practice.

FINDINGS

So, in the article the classification of approaches to the definition of "knowledge", presented in the diversity and complexity of the internal structure of this concept, as well as the author's definition is presented on the basis of information approach.

Beyond the scope of this article the following question remain: classification of knowledge, valuation and quality of knowledge, competence profile of knowledge manager, and the question of building a system of knowledge management. These issues will be considered in future publications.

CONCLUSION

In the context of global competition knowledge becomes one of the key factors affecting the competitiveness of a company in many aspects of business. The companies most effectively using knowledge reach leadership positions.

Use of the knowledge based management concept faces a number of theoretical and practical difficulties. This happens also due to the fact, among other things, that the knowledge itself is a multisided and complex conception.

The article analyses the existing definitions of "knowledge", features the approaches to grouping the definitions of this term and their classification attributes. Furthermore, the article identifies basic features of knowledge and suggests the author's definition of "knowledge" conception.

The analysis fulfilled is the basis for further research in terms of solving the problems of practical application of the management concept based on knowledge and its development.

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MARKET RISKS OF FINANCIAL SECTOR AND THEIR IMPACT ON THE REGIONAL INSTITUTIONS*

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ABSTRACT

The article considers the impact of components of market risk on its dynamics and structure of the Russian finance industry. It estimates change in the structure and in the number of financial institutions calculating market risk. It also identifies cause and effect link between the changes studied. The reasons of decline in the share of market risk in the general risks of the banking sector and a small growth of the market risk for the 2013-2014. Identifies the source and reasons for changes in the basic structure of the market risk and the built causal relationships change of market risk in the dynamics during the analyzed period. The article analyzes the market risk framework to determine the significance of market risk components in the domestic banking sector. Also referred to the importance of market risk for the medium and large banks that have built risk management policy and who are interested in the prediction of bank risks. In this article are revealed the causes of currency and stock market risk for the 2013-2014 and identified the relative growth of the two risks in the structure of the market risk for 2014. In addition, the article pointed out that throughout the analyzed period, interest rate risk and market risk in the structure of dominance has been defined.

Key Words: Market Risk, Interest Rate Risk, Equity Risk, Currency Risk, Finance Industry, Financial Institutions, Macroeconomic Analysis

INTRODUCTION

Market risks are the subject of growing attention from the international community. The Bank of Russia made certain steps toward the formation of effective systems of internal control over of financial institutions. Financial instruments have the elements of market risk with a specific market and the price or benchmark (index, average value) based on which the participants can assess their position.

However, the availability of the market and of the instruments does not point to the existence of a threat to the financial institution. A financial institution carries out a transaction which results in the fact that it will become the owner of a financial asset, carry the risk, or will assume an obligation to perform certain actions with the asset in the future. But, nevertheless, the market risk exists objectively, regardless of the wishes of the financial institution that may control them, but cannot affect its existence.

Along with thorough supervision and regulation, the Central Bank of the Russian Federation in the framework of monitoring the activities of Russian financial institutions pays great attention to risk-contributing events that result in different kinds of risks in the national finance industry which directly affect the financial performance of any financial institution.

THEORY

At the end of each calendar year the official website of the Bank of Russia provides annual report on the development of the finance industry and financial supervision. In its second section the Bank of Russia summarizes the results of the calendar year within typical financial risks faced by the national finance industry. It includes market risk as well.

Market risk refers to the risk of financial losses and off balance sheet operations of the financial institution due to adverse changes in the level of market prices. Consequently, market risks, in our view include both, the risks associated with financial instruments sensitive to changes in current market prices, foreign exchange rates and prices of precious metals and foreign exchange and commodity risks for all operations of the financial institution.

This approach is the most comprehensive since the market risk is due to the possible impact of market factors affecting the value of assets, liabilities and off-balance sheet operations of financial institutions.

Figures of annual reports of the Central Bank on the development of the finance industry and financial supervision will be used to analyze market risk of the Russian finance industry for 2013-2014. Methods of quantitative and qualitative analysis will be applied to do that.

Macroeconomic analysis should include the following stages:

1. analyzing the dynamics and structure of the market risk by the components of the market risk;
2. assessing changes in the number of financial institutions which calculate market risk by its components;
3. identifying the causes that contributed to the change in market risk and analyzing these factors.

RESULTS

To begin with, we have to define market risk and its share in total financial risks of the national finance industry. Figure 1 shows the necessary data for economic analysis.

Figure 1
DYNAMICS OF MARKET RISK AND ITS SHARE IN TOTAL FINANCIAL RISKS OF THE DOMESTIC FINANCE INDUSTRY

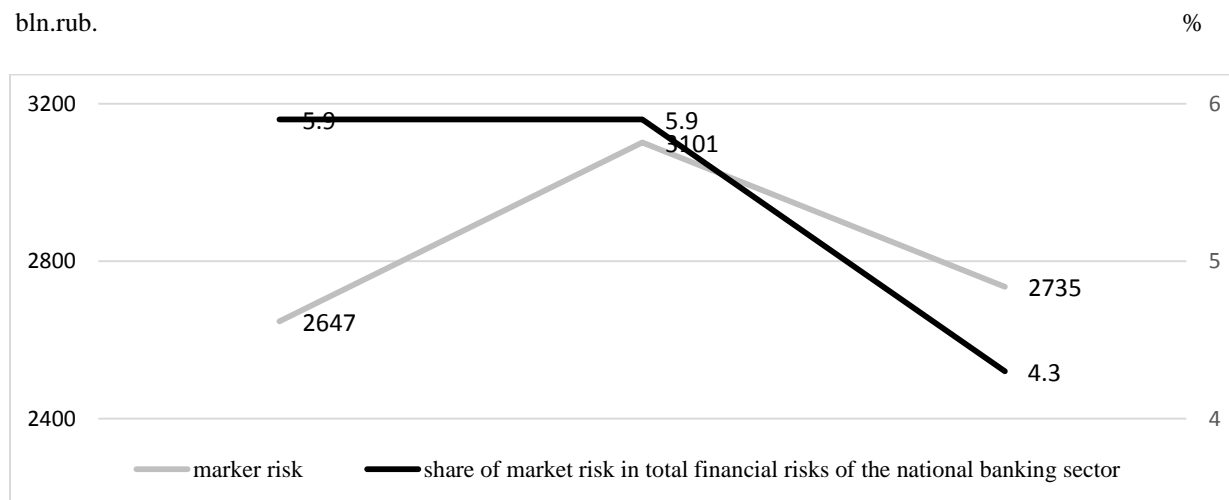
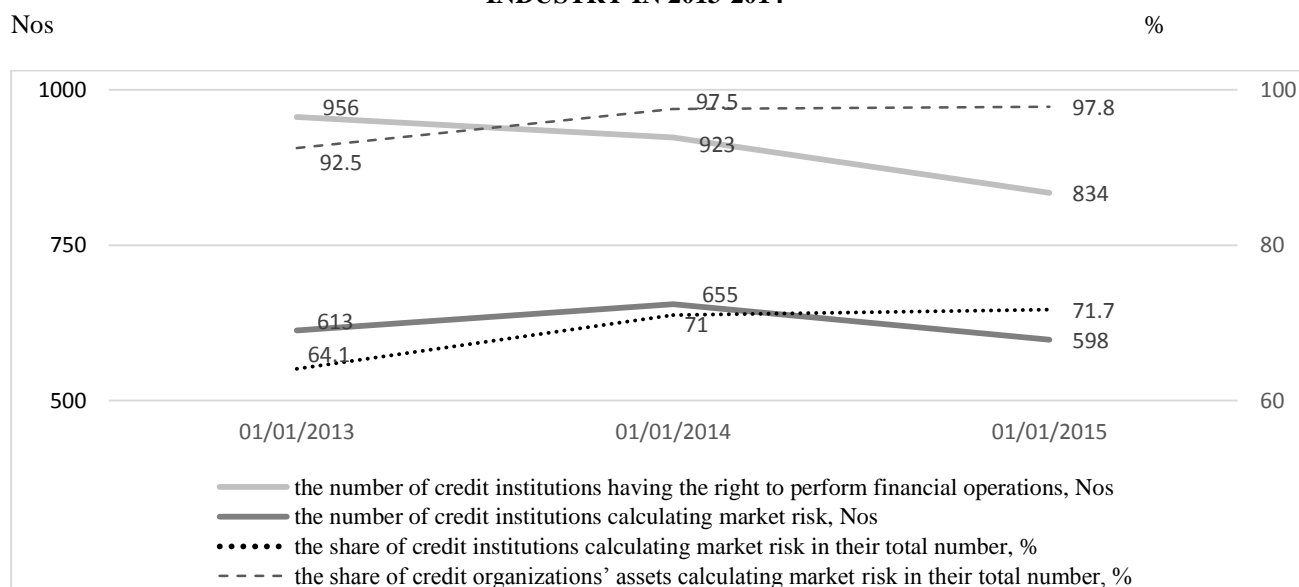


Figure 1 shows that after a slight increase of market risk by 454 billion rubles in 2013 in the national finance industry, in 2014 it showed a downward trend by 366 billion rubles, thus reducing its share in the total risk of the finance industry from 5.9% at the beginning of 2013-2014 to 4.3% at the beginning of 2015. The decline in the share of market risk in the total financial risks and a slight growth of market risk for 2013-2014 is caused by three factors - firstly, outpacing growth of other common risks for the period, primarily, credit risk outpaced market risk, which grew by only 88 billion rubles or 3.33% for the period. Secondly, in 2014 there was a slowdown of financial operations, which partly depended on market conditions. In particular, the slowdown affected securities trading (which influences the equity risk), the volume of loans granted to the population and enterprises in 2014 accounted for a smaller amount than in 2013 (which determined the impact on interest rate risk), however, at the end of 2014 dealings in foreign exchange boosted, which naturally affected the foreign exchange risk. Thirdly, this dynamics of market risk could also be influenced by the finance industry participants who calculate the amount of market risk and report to the Bank of Russia. Thus, the reduction in the number of financial institutions could reflect the incompleteness of the magnitude of the true market risk, so we will further calculate this and other indicators and show all estimates in Fig.2.

Figure 2

THE NUMBER OF FINANCIAL INSTITUTIONS WHICH CALCULATE MARKET RISK AND THEIR SHARE IN THE TOTAL NUMBER OF FINANCIAL INSTITUTIONS IN THE RUSSIAN FINANCE INDUSTRY IN 2013-2014



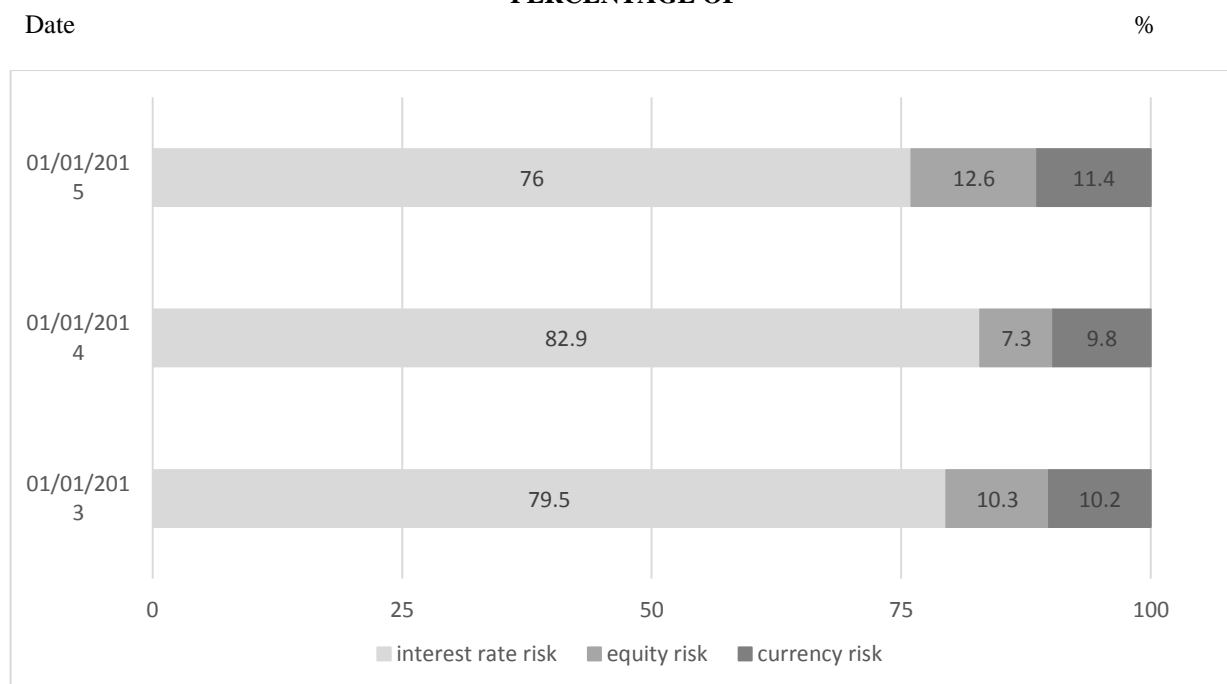
According to Figure 2, there is a decrease in the number of financial institutions with the right to perform financial transactions, due to the fact that the Bank of Russia implemented the consolidation policy of the Russian finance industry and as a financial regulator of the country, in recent years it used to revoke licenses of financial institutions which do not fulfill the requirements of the Bank of Russia. In particular, this forced smaller financial institutions to join to larger ones, which resulted in the increase of M&A transactions in the Russian finance industry. Due to this, financial institutions are becoming larger, and after mergers and acquisitions the number of financial institutions that calculate market risk becomes smaller a priori.

Figure 2 shows that there is a decrease in the number of financial institutions which calculate market risk for 2013-2014, the total number of financial institutions decreased by 15 and made 598. Given the large reduction in the total number of financial institutions, the share of financial institutions calculating the value of market risk increased from 64.1% in early 2013 to 71.7% in early 2014, the growth rate of the index for the period under review increased by 11.82%. The key and the most important conclusion is that 598 financial institutions (by the end of 2014; and calculating market risk) accounted for 97.8% of assets in the national finance industry, that is, it turns out that the remaining 236 financial institutions accounted for only 2.2% of the Russian finance industry assets.

This means that only large and medium-sized financial institutions are forced to calculate market risk, they have a risk management policy built and they are interested in predicting financial risks, since the markets where these financial institutions operate, are exposed to risk and sensitive to it. In the meantime small financial institutions often do not even have divisions and departments for managing financial risks required for the study and evaluation of the risks such as a market risk. Thus, our earlier assumption that the reduction in the number of financial institutions that calculate market risk is one of the causes for the decline of market risk in the Russian finance industry was right.

Next, it is necessary to analyze the structure of market risk in order to determine the significance of the components of market risk in the national finance industry. The structure of the market risk in dynamics is shown in Figure 3.

Figure 3
THE STRUCTURE OF MARKET RISK OF THE RUSSIAN FINANCE INDUSTRY IN DYNAMICS, AS A PERCENTAGE OF



According to Figure 3, we can conclude that the dominance of the interest rate risk in the structure of Russian financial institutions' market risk is obvious throughout the analyzed period. Interest rate risk occurs in each financial institution in the normal course of business, because

each financial institution possesses sensitive assets and liabilities, while transactions in financial instruments (including securities) and in foreign exchange (including precious metals and stones), which respectively determine the change of the stock and foreign exchange risks, are not carried out by all financial institutions in Russia.

Given that in 2013-2014 equity and currency risks decreased as a percentage in the structure of market risk, as well as in absolute terms (equity risk - by 52.9 billion rubles, at the beginning of 2015 it is 281.7 billion rubles, and currency risk - by 22.7 billion rubles amounting to 279 billion rubles by the beginning of 2015), one could see an increase in the interest rate risk by 3.5 points in the structure of market risk, and in absolute terms the figure rose to 163.7 billion rubles, reaching 2 174.3 billion rubles by the beginning of 2015.

Next, we will identify the causes of reducing the currency and equity risk for 2013-2014, as well as determine the relative growth of two risks in the structure of market risk for 2014. First, we have to note that a local currency crisis in Russia was only during the 4th quarter 2014 of the period analyzed, therefore, the negative situation with the fall of the ruble exchange rate against the euro and the US dollar, leading foreign currencies, affected the change of the currency risk not so significantly as it could affect, supposing, if the ruble was weakened, at the beginning of 2014. On this basis, we can conclude that Russian financial institutions carried out less exchange transactions over 2013-2014 than with the ruble, this is seen as the cause of reducing the currency risk for the analyzed period (for 2014 currency risk decreased by 24.9 billion rubles). However, this reduction is reflected in the relative growth of currency risk in the structure of market risk by 3 percentage points over 2014, as the decrease in the interest rate risk in 2014 was even more significant - 396.4 billion rubles.

Reduced interest risk in 2014 was largely due to greater stability in interest rates on lending and deposits, as growth occurred in the 4th quarter of 2014, when the Bank of Russia increased the key rate to 17% (from 16.12. 2014) and almost all financial institutions in Russia revised their interest rate policy raising both credit and deposit rates. It is common that when the country keeps stable interest rates for a long period, the financial institutions are less sensitive to interest rate risk, which was the reason for the decline of interest rate risk in 2014.

If the country has a stable economy, the stock and bonds of resident issuers are becoming attractive, since their quotations on the stock exchange rise and the volume of securities transactions, including financial operations, are increasing in the dynamics. This, in our opinion, explains the increase in the equity risk for 2014 by 55.3 billion rubles, as the volume of transactions with financial instruments with the participation of financial institutions increased, due to their attractiveness.

In addition, it is necessary to note another aspect of the equity and currency risks contingency as a part of market risk and its impact on the interest rate risk. To begin with, one can reveal some inverse correlation between the currency and equity risk from the annual dynamics (we consider 2013 and 2014 separately), since with the growth of currency risk in 2013 (2.2 billion rubles), the value of equity risk decreased (108.2 billion rubles). Whereas in 2014, with an increase in equity risk by 55.3 billion rubles, the value of the currency risk reduced by 24.9 billion rubles. The fact is that the Russian market of financial instruments is designed so that with the growth of share price of resident issuers, foreign currency weakens against the ruble. Whereas in case of problems with the capitalization of the organization, including the attractiveness of securities to investors from the income augmentation point of view, there is weakening of the ruble observed. Therefore, with one component of the market risk growing, the other one of market risk falls. While both risks in any case have an impact on interest rate risk, as

elements of financial instruments both in securities and foreign currency directly affect the interest rate, they result in the change of interest rate risk. Given that in the dynamics currency and interest risks trends are similar to each other, it allows us to conclude that the cause for the change of interest rate risk, to a greater extent, is the currency risk. After that there is a change in the equity risk, and the residual effect is reflected in the interest rate risk.

Thus, we have identified the initial and main causes for changes in the basic structure of the market risk and built cause and effect link in the change of market risk during the analyzed period. Next we will review 2013 and 2014 based on the changes and the impact of components of market risk on the very magnitude of the risk.

In 2013, the value of the interest rate risk was influenced by the volume of debt (they accounted for 87% of investments of financial organizations in Russia).

The growing share of the currency component in the assets and liabilities of the Russian finance industry with 21% of assets and 20.9% of liabilities at the beginning of 2013 to 22.1% of assets and 21.2% of liabilities at the beginning of 2014 is linked with the dynamics of the ruble as well. Foreign currency assets in dollars increased in 2013 by 13.2% (liabilities 9.3%), while the ruble-denominated assets by 14.4% (liabilities to 15.5%). In 2013, aggregate on- and off-balance assets and liabilities in foreign currency increased, but the difference between the currency assets and liabilities on- and off-balance sheet transactions decreased as a whole for 2013 (up to 466 billion rubles on 01.01.2014 from 493 billion rubles on 01.01.2013). The forward position – short in US dollars and long in euro - increased for 2013.

In 2014, the share of foreign currency component of assets and liabilities of the finance industry increased from 22.1% to 30.0% of assets and from 21.2% to 29.0% - of liabilities of financial institutions. Foreign currency assets in dollars for 2014 increased by 6.7% (liabilities - 7.4%), while the ruble-denominated assets - by 21.6% (liabilities - by 21.9%). In 2014, aggregate on- and off-balance assets and liabilities in foreign currency increased. The difference between the foreign currency assets and liabilities on- and off-balance sheet transactions increased from 466 billion rubles on 01.01.2014 to 1 275 billion rubles on 01.01.2015, the forward positions - short for dollar and long for euro - increased for 2014.

CONCLUSIONS

Thus, we can conclude that the majority of Russian financial institutions act as financial institutions raising funds for deposits, grant loans, and provide cash management services. However, they operate on the stock and the derivatives markets, which is typical for investment financial institutions. In this approach, the investment risks overlap credit risks, which may lead to a cumulative effect.

Summarizing the analytical review of market risks in the Russian finance industry, we note that the period under review sees an increase in market risk, which is significantly affected by the growth in the interest rate risk. Nevertheless, the share of the market risk as a part of total financial risk has fallen due to the greater growth of credit and other typical financial risks. We have also determined that, despite the reverse dependence of the stock and foreign exchange risk, interest rate risk is still growing, resulting in an increase in market risk. Regarding the structure, we should note that throughout the analyzed period, the interest rate risk dominated in the structure of market risk (about 80% at the beginning of 2015), while foreign exchange and equity risk accounted for 10%, respectively.

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DEVELOPMENT OF INTERNET BANKING ON BANKING SERVICES MARKET

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ABSTRACT

This article considers banking sector development, which is connected with the improvement of doing banking business through the use of Internet technology. The problem of introducing and developing modern banking technologies in the Russian Federation is very topical. The paper points to a number of advantages when introducing banking computerized systems and the most common ways of on-line payments and client identification in Russia. The structure of accounts with remote access that are opened by individuals and legal entities with Russian credit organizations are analyzed. Some measures to develop Internet technologies markets are proposed. A new method is Internet banking or telebanking, which allows expanding bank's customer base, to reduce business expenses and provide structure innovatization of economic development of the real and financial sectors of the Russian economy. Modernization will become a key expenditure item for the banks in the future. There are also considers improving the legal framework, development of the insurance system, implementation of an integrated approach to risk management, institutional changes in the activities of credit institutions, improving the financial literacy of the population and increasing citizens' skills in managing personal finances.

Key Words: *Internet Banking, Banking Services, Online Payments, the Banking Computerized Systems, Credit Organization*

INTRODUCTION

Under current economic conditions, banks are forced to look for new ways to provide their services; it is primarily connected with the transformation of banking activity due to the introduction of modern information technologies. A new method is Internet banking or telebanking which allows not only to expand bank's customer base, to reduce business expenses, but also, in general, to provide structure innovatization of economic development of the real and financial sectors of the Russian economy. Provision of banking services requires large consumption of material resources. At the same time, focus on profit forces banks to seek to reduce the costs of providing services. This reflects the basic problem of slowing the introduction of the Internet technologies.

With the rapid development of the Internet technologies, credit institution customer is able to enjoy a significant number of banking services using only the web browser. To gain access to your personal account, you only need to have a personal computer and a mobile phone connected to the Internet. Thus, the global network has allowed eliminating barriers between bank and client. Credit institutions with a broad range of customers can reduce the maintenance

cost of their branch network, thereby reducing the cost of their services. Using telebanking via the Internet leads to increased costs of technology, but they pay off due to economies of scale.

THEORY

The question of introduction and development of modern banking technologies in the Russian Federation is relevant; this is indicated in the Statement of the Government of the Russian Federation and the Central Bank of April 5, 2011 № 1472p-P13, 01-001 / 1280 "On the banking sector development strategy of the Russian Federation for the period up to 2015." According to the statement, the current banking activities are impossible without the introduction of advanced information technologies to improve the quality of the credit institution services and expand their list. The introduction of information technology in banking can increase the efficiency of the bank's activities.

Implementation of bank computerized systems provides credit organization with several advantages:

1. The economic benefits due to reducing the cost of customer service - when using telebanking, costs are significantly lower than when providing services in bank branches and affiliates. Here, the bank requires significant investment to introduce computerized systems, but they pay off quickly within a given period, it triggers the economies of scale: the more customers are, the lower are costs;
2. More efficient servicing of bank customers, this is due to the fact that any single bank branch cannot handle tens of thousands of customers in a short period of time, while using innovative banking technologies, this becomes possible;
3. Solving the problem of bank network development to ensure the availability of banking services to customers of credit institution;
4. New geographical segments which allow the credit institution to expand its customer base;
5. Increasing the speed and quality of services provided;
6. Reduction of the bank's operational risk due to the increased accuracy of the bank operations done;
7. A bank has an opportunity to create fundamentally new banking products and services, which result in improving competitiveness of the bank.

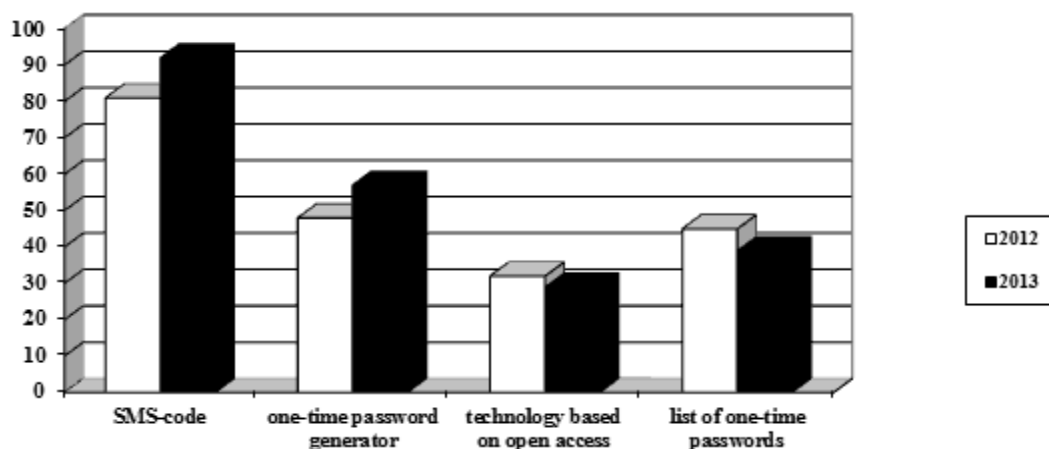
RESULTS

According to a survey conducted by the National Agency for Financial Studies, the highest priority factor in the use of Internet banking is security. According to surveys, about 25% of the Russian Internet users are not sure about the reliability of banking online systems.

Modernization will become a key expenditure item for the banks in the future. Half of the banks surveyed expect growth in spending on modernization in the next two years. For example, banks of France and Germany planned to increase spending on cyber security by 61% in 2014, and banks in Britain are showing increased interest in the transition to digital banking.

SMS-code is still the most common way of bank users' authentication over the last few years (Fig. 2). The banks, seeking to ensure the safety of telebanking operation started a massive shift to the technology of two-factor protection, while using it the customer enters the necessary data: login and password and one-time SMS-code.

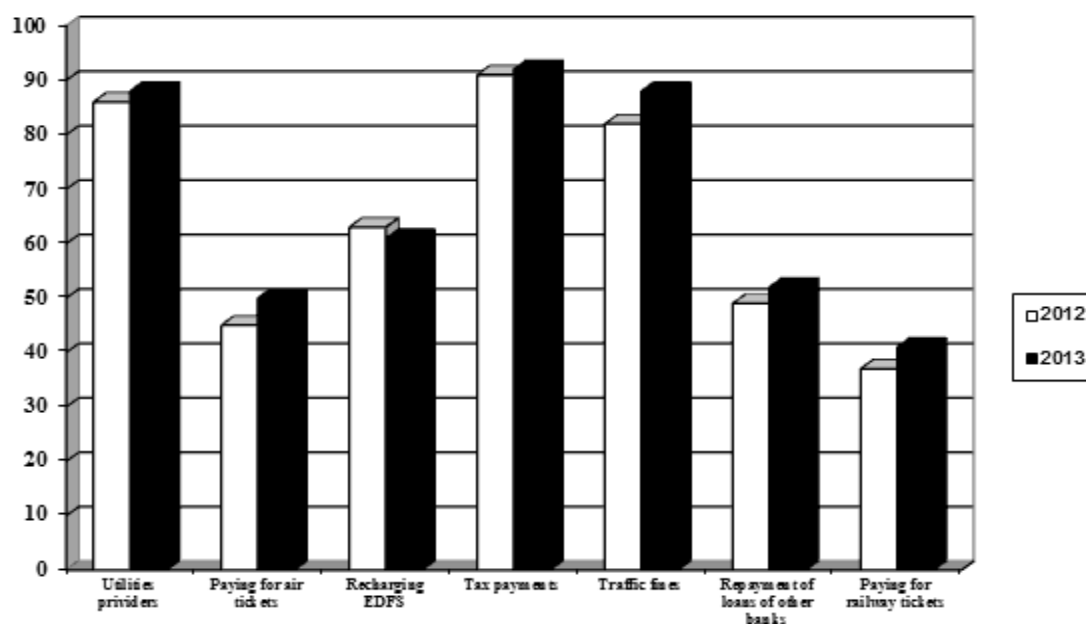
Figure 1
THE MOST COMMON WAYS OF IDENTIFYING THE CLIENT



When selecting different telebanking technologies, a credit institution should examine its attendant risks in detail, which may pose a potential threat to the bank's activities, as well as to evaluate management of the technology and to ensure control over its use. Also, it should be noted that the use of Internet banking increases anonymity of services, which entails a significant increase in traditional banking risks.

Despite many risks associated with banking activities on the Internet, year after year, an increasing number of payments are conducted online. Currently, 46% of Russian city residents use Internet banking services regularly (Fig. 2). In the US, 61% of the adult population uses online banking.

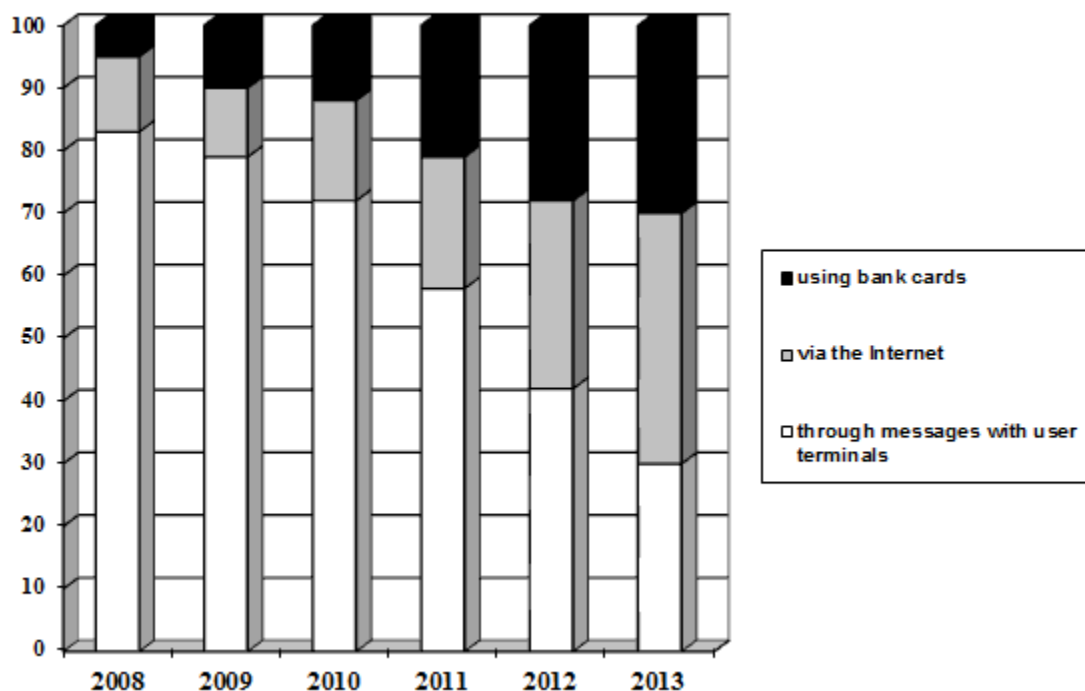
Figure 2
THE MOST COMMON TYPES OF ONLINE PAYMENTS IN RUSSIA



According to data published on the official website of the Central Bank for 2013, we can draw conclusions about the positive development dynamics of modern technologies in the banking market.

The number of accounts with remote access opened with credit institutions from 2011 to 2013 increased by half (from 59,042.7 thousand units to 102,872.9 thousand units) (Fig. 3). Also, it should be noted that this trend is typical for individuals to a greater extent than for businesses. In turn, the number of accounts with access via the Internet has more than doubled. This trend can be explained by the computerization of banking operations and by an increase in the number of Internet banking users.

Figure 3
STRUCTURE OF THE ACCOUNTS OPENED BY INDIVIDUALS WITH CREDIT INSTITUTIONS IN RUSSIA

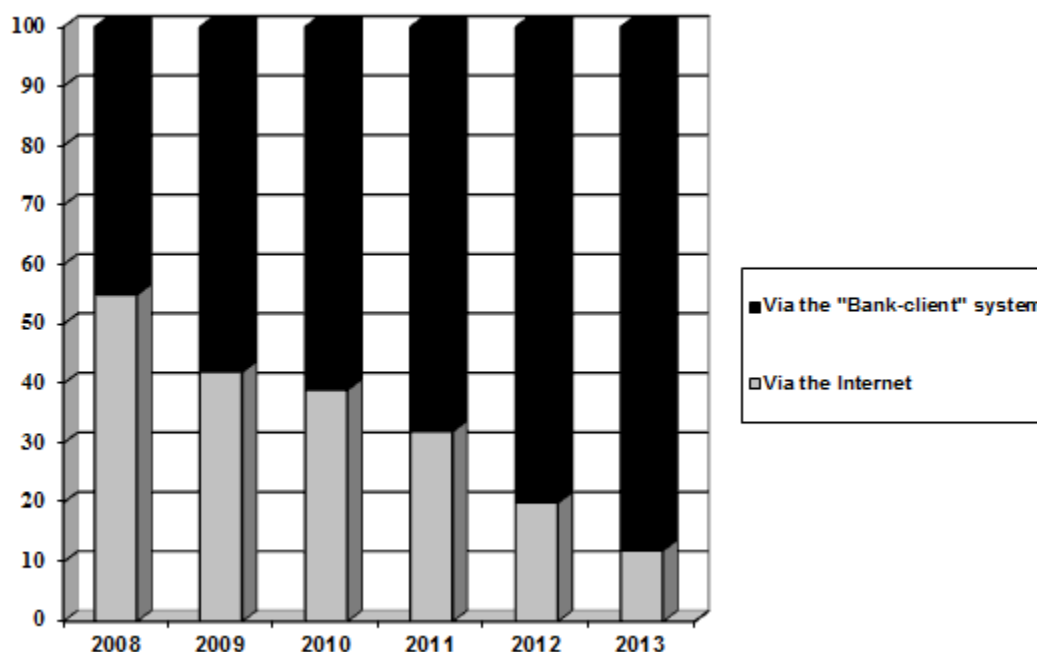


For several years from 2008 to 2010, the number of accounts opened by individuals over the Internet has been constant. At the same time, this figure is increasing annually and in 2013 it amounted to about 40% of all accounts opened. If the trend continues, by 2015 more than 50% of accounts will be opened via the Internet. This fact indicates a growing need for services provided by banking computerized systems.

The structure of bank accounts opened by legal entities looks a little different (Fig. 4).

Currently an increasing number of clients among legal entities use the services of the bank with the help of the Internet instead of the "Client-Bank" system. This dynamics proves that users prefer the thin client system which is much more convenient to use. If the dynamics is maintained in the coming years, the "Bank-Client" system will soon leave the market of banking services, as bank computerized systems are developing very rapidly and allow credit institutions to provide services of higher quality than using outdated "Bank-client" system.

Figure 4
THE STRUCTURE OF THE ACCOUNTS WITH REMOTE ACCESS OPENED TO LEGAL ENTITIES -
NON-CREDIT INSTITUTIONS IN CREDIT INSTITUTIONS IN RUSSIA



It should also be noted that much of the calculations carried out in 2013 was transferred via the Internet (total number of payments - 2 221.2 mln.units, including 754.8 mln.units via the Internet). For example, over the past year the Russian market of Internet banking rose to 590 billion rubles. In the long term, in 2017 the market of Internet banking may amount to 1.6-1.8 trillion. rub. Thus, the Internet banking in Russia is developing, at the same time the pace of its development should be activated.

CONCLUSIONS

The measures to develop Internet technologies market may include:

1. improving the legal framework:
 - the introduction of standards for reliable information exchange in electronic banking services;
 - regulation of the rights, responsibilities and legitimate interests of all parties that use electronic banking technologies.
2. development of the insurance system:
 - insurance of information risks by banks
3. implementation of an integrated approach to risk management:
 - revaluation of traditional control methods and development of new ones over banking risks and their management with the new sources and components of banking information contours.
4. institutional changes in the activities of credit institutions:
 - to activate the channels of public information systems about electronic banking;
 - to train the staff and customers of a bank to ensure the confidentiality and security of the system.
5. to improve the financial literacy of the population;
6. to increase citizens' skills in managing personal finances.

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DIAGNOSTICS OF REGIONAL BANKING SYSTEMS STABILITY AS AN INSTRUMENT OF INTEGRATION

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ABSTRACT

This paper deals with the problem of increase the efficiency of the integration of regional banking systems. Today, small and medium regional banks are not able to ensure the regional economy banking products and services. In this regard, there is a need of the integration of regional credit institutions and regional banking systems. At the same time there is the inefficiency of joint banks associated with incorrect assessment of candidates for integration. To solve this problem, we tested a methodology of the rating agency «Expert» on the example of regional banking systems of the Volga Federal District. By results of the implementation of this methodological approach we revealed two trends in activity of regional banking systems, namely reduction in efficiency of operation and reduction of capitalization. And the most attractive for integration regional banking systems are the Perm Krai, the Republic of Mari El, Mordovia, Ulyanovsk region, the Chuvash Republic.

Key Words: *Regional Banking Systems, Financial Stability, Evaluation, Integration*

INTRODUCTION

One of the key factors of development of the regional economy and, as a consequence, the Russian economy are effectively functioning regional banks and banking systems. Regional banks are closer to the real economy, their relationship with the companies has a long-term basis, and they better consider the interests of small enterprises. Therefore, the main activities and prospects of development of regional banks are directly connected with their active participation in financing of manufacturing, small and medium businesses, financial support programs for the economic development of the regions.

However today small and medium regional banks are not able to ensure the regional economy banking products and services. In this regard, there is a need for a regional bank that meets the needs of the regional economy. One of the options for creation of such bank is the integration of regional credit institutions and regional banking systems. At the same time, the experience shows that despite the intensification of integration processes in the banking sector, there is the inefficiency of joint banks. One reason for the inefficiency is incorrect assessment of candidates for integration.

LITERATURE REVIEW

In modern literature allocate some author's approaches to the selection of candidates for the integration of the banking business, thus these approaches have several limitations for practical application. I.V. Larionov includes in the process of an assessment of candidates: analysis of financial performance and technical specifications, evaluation of corporate culture

and human resource capacity of the object, analysis of characteristics of organizational structure, evaluation of the information systems in terms of their convertibility and compatibility. A.I. Sedin proposes five key categories for the analysis of the candidates: financial performance, compatibility of products and structure of presence in the market, compatibility of corporate cultures, compatibility of information and management systems, aspects of state regulation. A.I. Sedin and I.V. Larionov pay considerable attention to the detailed analysis of several most probable candidates for integration, but have not developed specific theoretical and methodological approaches to definition of the «short» list of banks. At the same time at the beginning of 2015 in Russia operated 834 credit institutions and 85 banking systems, so development of approaches to the selection of candidates from a large number of banks and systems has been actual.

To solve this problem, we approve the methodology of an assessment of bank financial stability of the rating agency «Expert» on the example of regional banking systems of the Volga Federal District.

OBJECT

The Volga Federal District (further- VFD) includes 14 subjects of the Russian Federation, including 6 republics (Bashkortostan, Mari-El, Mordovia, Tatarstan, Udmurtia, Chuvashia), 7 regions (Kirov, Nizhny Novgorod, Orenburg, Penza, Samara, Saratov, Ulyanovsk), and Perm Krai (the region includes Perm region and Komi-Perm Autonomous District).

On the territory of the Volga Federal District 92 credit institutions function on January 1, 2015. Distribution of the credit institutions for subjects is presented in table 1.

Table 1
DISTRIBUTION OF THE CREDIT ORGANIZATIONS FOR SUBJECTS

Subjects	amount			
	01.01.2015	01.04.2015	01.07.2015	01.10.2015
Kirov region	3	3	3	3
Nizhny Novgorod Region	10	10	10	10
Orenburg region	7	7	7	7
Penza region	1	1	1	1
Perm Krai	4	4	4	4
Republic of Bashkortostan	7	7	7	6
Republic of Mari El	2	2	2	2
Republic of Mordovia	4	3	3	3
Republic of Tatarstan	22	22	22	22
Samara region	15	15	15	15
Saratov region	9	9	9	9
Udmurt Republic	2	2	2	2
Ulyanovsk region	2	2	2	2
Chuvash Republic	4	4	4	3

METHODOLOGY

To assess the financial stability of regional banking systems of Volga Federal District we use method of rating agency «Expert».

The approach used in the rating of the rating agency «Expert» is a bit different from other Russian techniques. This technique is an attempt to create a comprehensive comparative ranking.

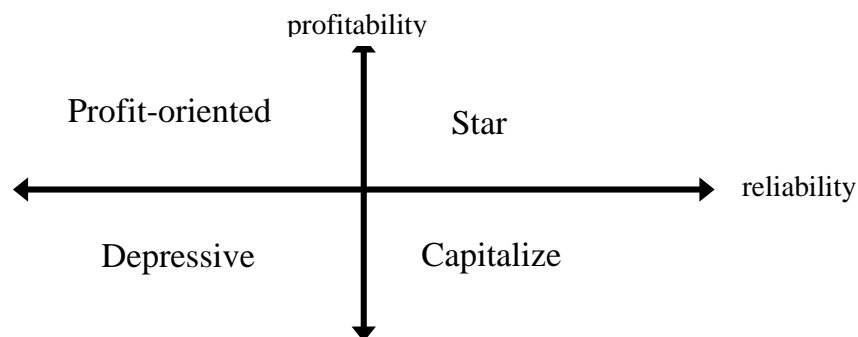
Procedure consists of two main parts. The first (static) part involves the comparison of the banks in the coordinate system of «profitability-reliability». The rate of profitability and an indicator of the reliability are carried out on the following formula:

$$\text{Rate of profitability} = \frac{\text{balance sheet profit}}{\text{net assets}} \quad (1)$$

$$\text{Indicator of the reliability} = \frac{\text{own capital}}{\text{borrowed funds}} \quad (2)$$

The results of two-criterion analysis of the current condition of the banks are put on a plane with the x-ax corresponds to the index of reliability, and the y-ax corresponds to the indicator of profitability, as a result the coordinate space is divided into four segments. The coordinate system of «profitability-reliability» is presented in figure 1.

Figure 1
THE COORDINATE SYSTEM OF «PROFITABILITY-RELIABILITY»



The second part is to analyze the dynamics of changes in the parameters of profitability and reliability over time.

To monitor the financial stability of credit institutions the Bank of Russia regulates indicators of their financial stability:

1. capital appreciation - appreciation of adequacy of own funds (capital), aggregate capital adequacy, capital quality control;
2. assets appreciation – appreciation of quality of loans, risk of loss, share of bad loans, size of loan loss and other assets provision;
3. yield appreciation – appreciation of assets and capital earning power, costs structure, net interest margin, net credit operations spread;
4. liquidity appreciation – appreciation of short-term, quick and current liquidity, structure of borrowed funds, risk of their own bill liabilities, nonbanking loans, averaging-out reserve requirements and risk of major creditors and depositors;
5. quality of management appreciation - appreciation of risk management and internal audit system, strategy risk management, risk management of personnel financial motivation;
6. appreciation of structure transparency – appreciation of disclosure adequacy, availability of information about individuals, who have a significant influence on the decisions taken by the bank control authorities of a significant impact on the bank management by the offshore residents.

RESULTS

We have analyzed the banking systems of subjects of the Volga Federal District, according to the methodology of the rating agency «Expert» for 4 reporting dates (January 1, 2015, April 1, 2015, July 1, 2015 and October 1, 2015). The results of calculations of profitability and reliability are reflected in table 2. Location of regional banking systems of the Volga Federal District in the coordinate system «profitability-reliability» is shown in figures 2-5.

Table 2
THE RESULTS OF CALCULATIONS OF PROFITABILITY AND RELIABILITY OF THE REGIONAL BANKING SYSTEMS

Subject	Profitability				Reliability			
	01.01.2015	01.04.2015	01.07.2015	01.10.2015	01.01.2015	01.04.2015	01.07.2015	01.10.2015
Kirov region	2,462	0,096	-0,153	-0,296	20,426	21,478	21,089	20,731
Nizhny Novgorod Region	2,199	1,040	1,255	-0,886	21,331	22,464	20,867	17,811
Orenburg region	1,174	0,144	0,141	0,063	26,422	26,219	24,731	24,187
Penza region	1,151	0,102	0,002	0,027	17,150	18,112	14,602	15,802
Perm Krai	0,202	0,330	0,344	0,181	16,663	17,831	18,831	18,451
Republic of Bashkortostan	0,913	0,090	0,347	-10,514	12,684	12,600	12,006	-6,659
Republic of Mari El	1,265	0,415	0,770	0,854	18,561	18,176	19,283	19,681
Republic of Mordovia	0,003	0,642	1,224	0,864	16,820	15,486	16,288	15,894
Republic of Tatarstan	0,515	0,018	-0,246	-0,551	21,406	20,989	20,380	21,589
Samara region	0,380	-0,136	-0,184	-0,710	24,570	26,114	25,572	22,378
Saratov region	1,099	-0,013	-0,592	-2,595	13,108	13,140	12,838	7,171
Udmurt Republic	0,472	0,173	0,113	0,102	14,554	15,835	16,280	16,342
Ulyanovsk region	0,582	0,265	0,196	0,386	27,707	27,810	26,153	24,369
Chuvash Republic	0,582	0,071	0,152	0,220	17,932	18,102	17,708	16,306

Figure 2
THE RESULTS OF DIAGNOSTIC STABILITY OF REGIONAL BANKING SYSTEMS ON JANUARY 1, 2015

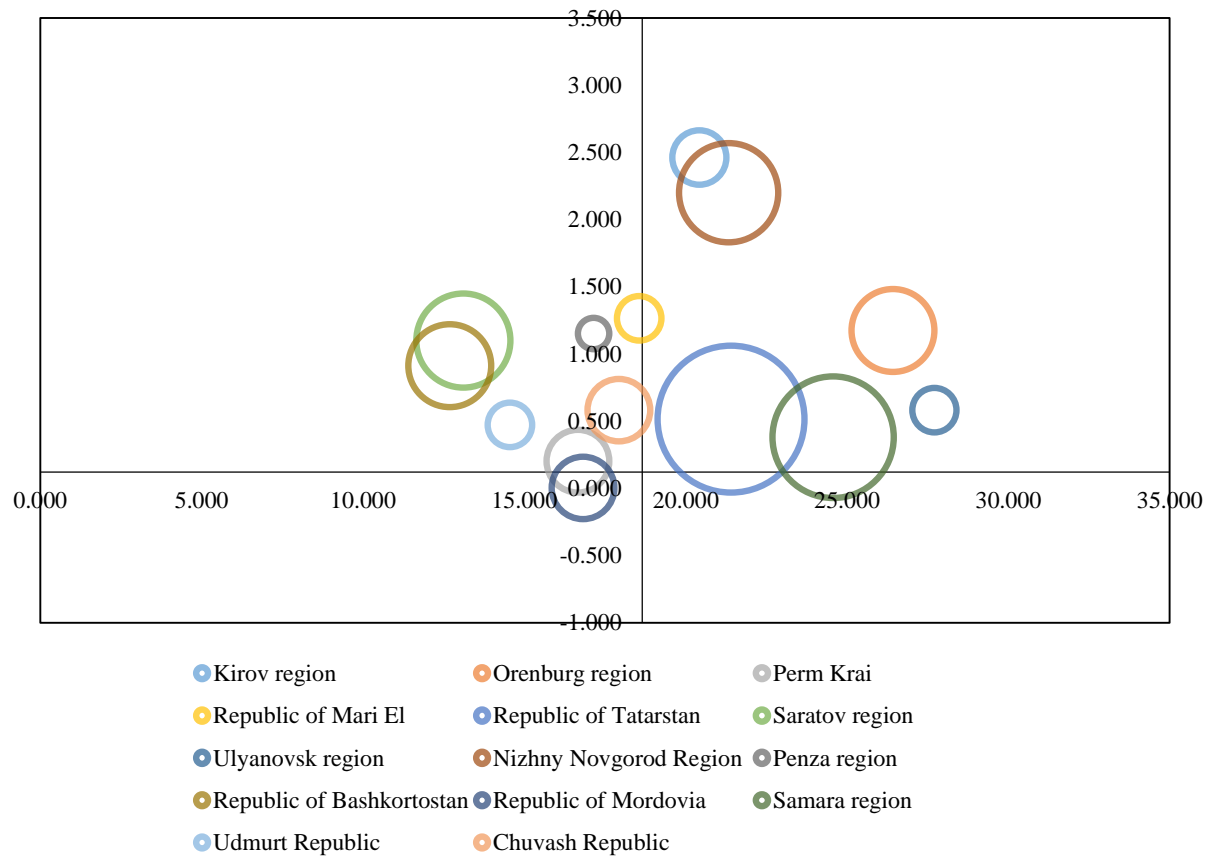


Figure 3
THE RESULTS OF DIAGNOSTIC STABILITY OF REGIONAL BANKING SYSTEMS ON APRIL 1, 2015

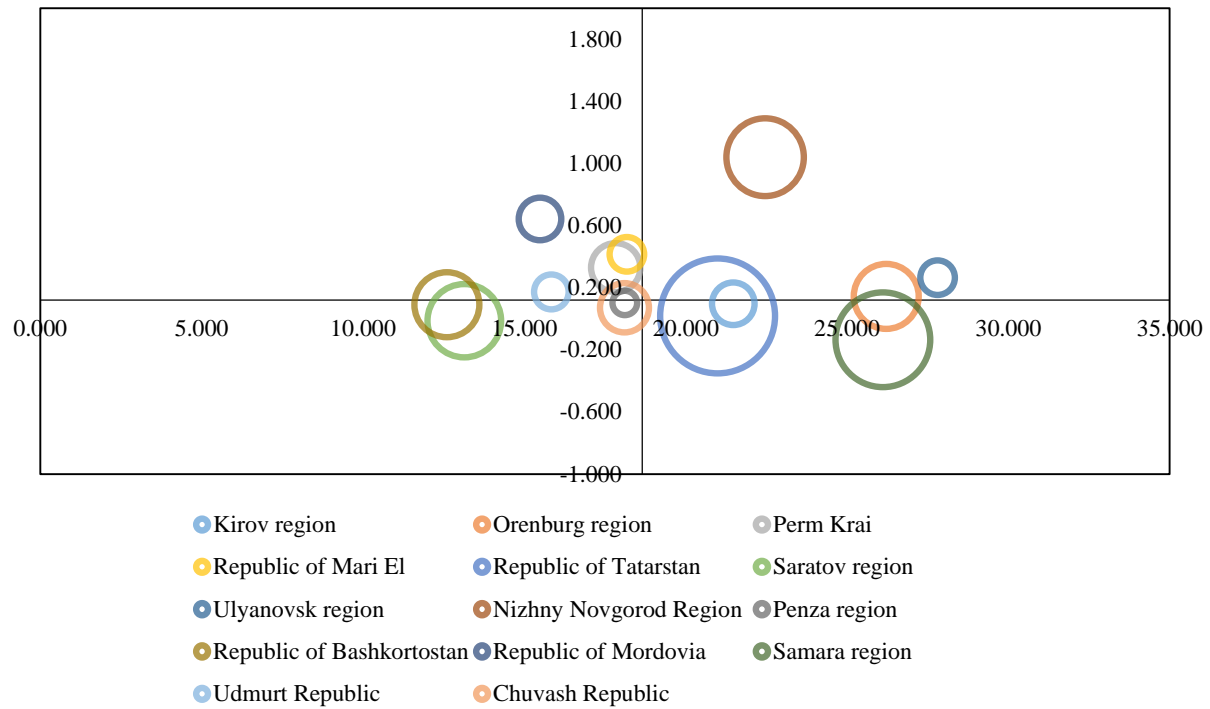


Figure 4
THE RESULTS OF DIAGNOSTIC STABILITY OF REGIONAL BANKING SYSTEMS IN THE JULY 1, 2015

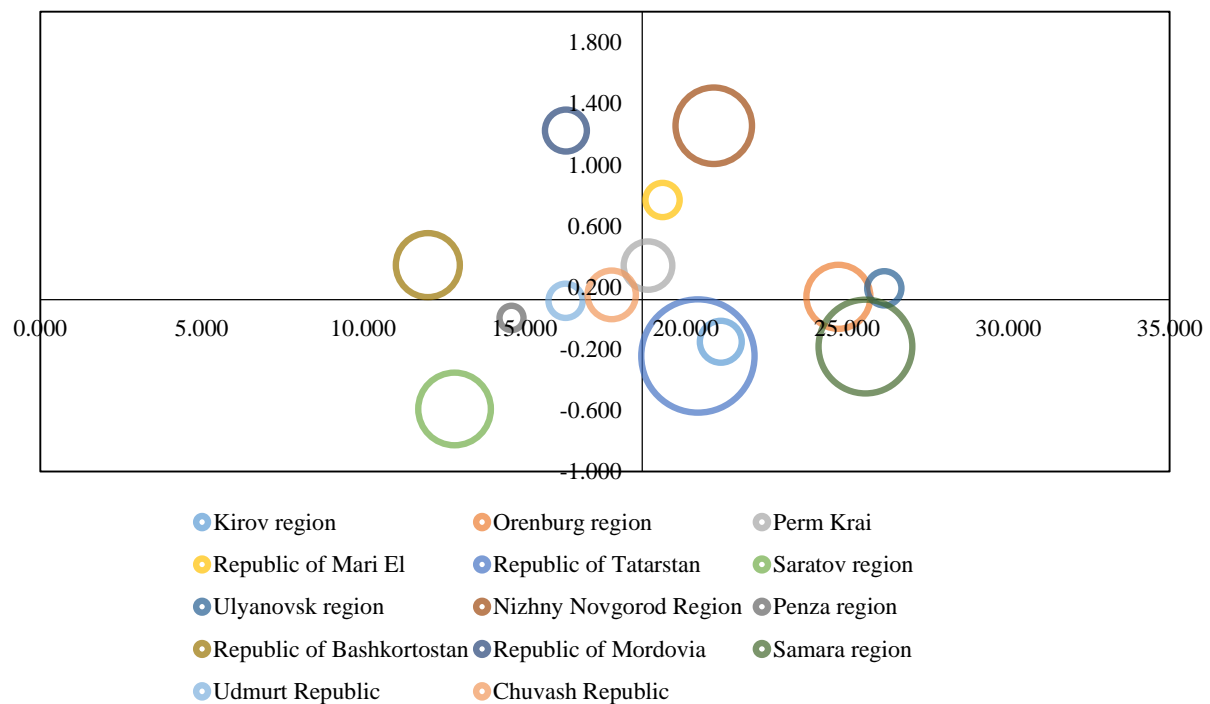
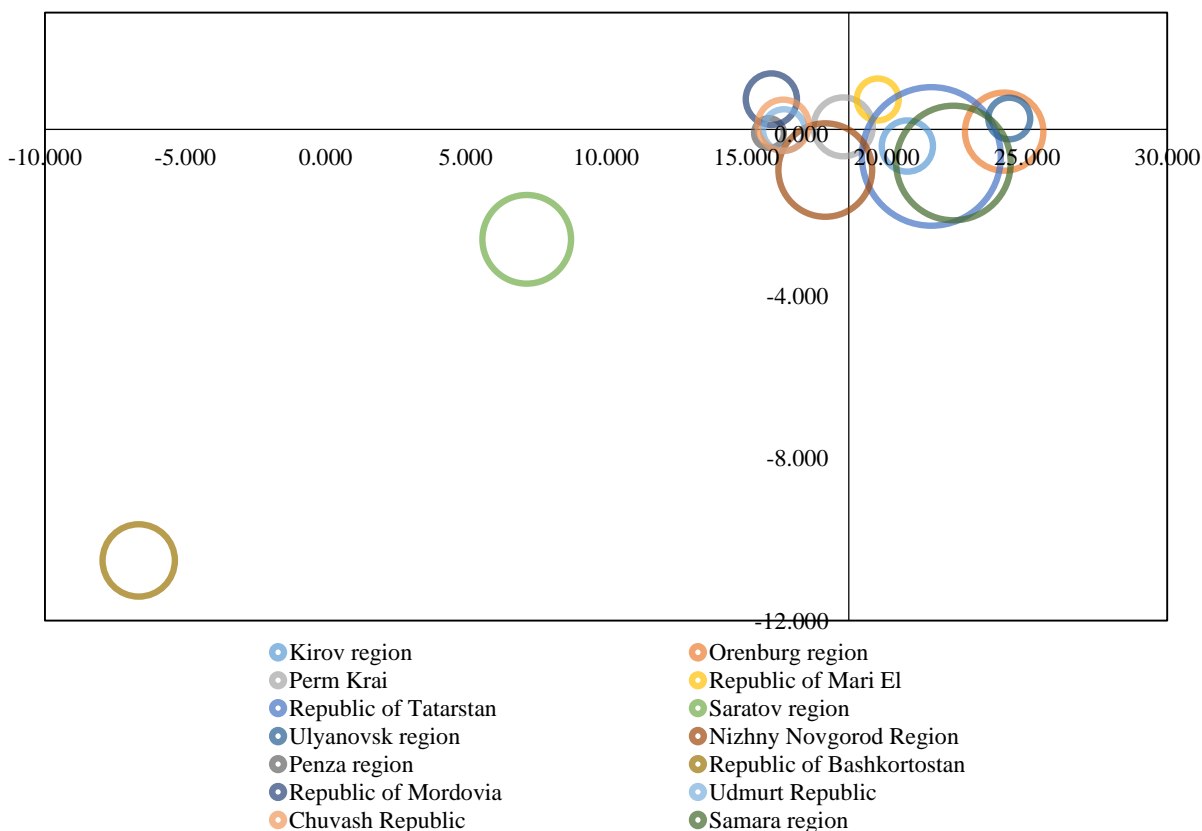


Figure 5
THE RESULTS OF DIAGNOSTIC STABILITY OF REGIONAL BANKING SYSTEMS ON OCTOBER 1, 2015



As we can see from the figures 2-5 there is negative trend in activity of regional banking systems in terms of the sustainability. On January 1, 2015 in the banking sector of the Volga Federal District dominated «star» regional banking systems which profitability and reliability were higher than average (share the «star» systems on January 1, 2015 - 43%) and «profit-oriented» banking systems with a highly profitable use of relatively large amounts of funds (share of the «profit-oriented» systems on January 1, 2015 - 50%). On October 1, 2015 the situation was diametrically opposite: 36% of the banking sector of the Volga Federal District was the «depressive» banking systems, whose reliability was below average, and there was low profitability of use of significant amounts of raised funds, and 29% «capitalized» regional banking systems which are characterized by high capital adequacy.















The presence of 36% of «depressive» regional banking systems within the banking sector of the Volga Federal District doesn't allow drawing a conclusion about its sustainability. Low profitability, and in certain cases unprofitability of the active operations performed by banks which varies for «depressive» systems from -10,5% to 0,1% on October 1, 2015 while for «star» and «profit-oriented» banking systems the level of profitability reaches 0,85% and 0,86% respectively is one of the major reason of domination of «depressive» banking systems.

Reliability index of the bank which determines the degree of coverage of funds by equity is no less important. The value of this indicator was in the range from -6,66% to 17,81% on 1 October 2015 for «depressive» banking systems, due to their significant under capitalization, given the fact that the profit is one of the most reliable sources of capital, and «depressed» banks

are characterized by low profitability, the current situation of these banking systems could be worsen in the medium term. As for the «star», «profit-oriented» and «capitalized» systems, for them the value of reliability index reached 24,37%, 18,45% and 24,19%, respectively. Thus, we can identify two trends in regional banking systems of VFD: decrease in efficiency of operation and reduction of capitalization.

For diagnosing tendencies of sustainable or unstable development of each regional banking system of Volga Federal District and definition of attractive systems for integration we aggregate the results reflected in figures 2-5 and create table 3.

Table 3
AGGREGATING THE RESULTS OF DIAGNOSTICS OF REGIONAL BANKING SYSTEMS

Subjects	01.01.2015	01.04.2015	01.07.2015	01.10.2015	Dynamics
Kirov region	Star	Capitalize	Capitalize	Capitalize	
Nizhny Novgorod Region	Star	Star	Star	Depressive	
Orenburg region	Star	Star	Star	Capitalize	
Penza region	Profit-oriented	Depressive	Depressive	Depressive	
Perm Krai	Profit-oriented	Profit-oriented	Star	Profit-oriented	
Republic of Bashkortostan	Profit-oriented	Depressive	Profit-oriented	Depressive	
Republic of Mari El	Profit-oriented	Profit-oriented	Star	Star	
Republic of Mordovia	Depressive	Profit-oriented	Profit-oriented	Profit-oriented	
Republic of Tatarstan	Star	Capitalize	Capitalize	Capitalize	
Samara region	Star	Capitalize	Capitalize	Capitalize	
Saratov region	Profit-oriented	Depressive	Depressive	Depressive	
Udmurt Republic	Profit-oriented	Profit-oriented	Depressive	Depressive	
Ulyanovsk region	Star	Star	Star	Star	
Chuvash Republic	Profit-oriented	Depressive	Profit-oriented	Profit-oriented	

Based on the data of table 3 it is possible to draw a conclusion that from the 14 regional banking systems of the district, the negative dynamics is typical for 9 (or 64%), while 5 systems of 9 have passed into the category of «depressive», which brings out the need for integration of regional banking systems for increase efficiency, financial sustainability and to meet the needs of the region's economy.

The most attractive for integration regional banking systems according to methodology of the rating agency «Expert» are the Perm Krai, the Republic of Mari El, Mordovia, Ulyanovsk

region, the Chuvash Republic. A characteristic feature of these systems is a small number of regional banks in the system.

CONCLUSION

In modern conditions, small and medium regional banks cannot provide the banking services in the region's economy. In this regard, there is a need to integrate regional credit institutions and regional banking systems. Thus for effective functioning of the joint banks, it is necessary a correct assessment of candidates for integration. In order to solve this problem, we tested a methodology of financial stability assessment of the rating agency «Expert» on the example of regional banking systems of the Volga Federal District. By results of the implementation of this methodological approach we revealed two trends in activity of regional banking systems, namely reduction in efficiency of operation and reduction of capitalization. And the most attractive for integration regional banking systems according to methodology of the rating agency «Expert» are the Perm Krai, the Republic of Mari El, Mordovia, Ulyanovsk region, the Chuvash Republic.

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THE MODELING OF INDUSTRIAL ENTITY'S DYNAMICS STAFF COSTS

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ABSTRACT

This article is devoted to a necessity of perspective value of staff costs in according to strategic business principles. The scientific and practice aspects of modeling of trends of changing staff costs of industrial entity are researched. The possibilities of models of time domain applying are estimated. The using of additive models such as moving average, smoothing fluctuations and sharing out the main trends of staff costs dynamics and also the model of exponential smoothing considering various value of a temporary row are reviewed. The appointment and features of each type of numerical modeling of staff costs level are allocated. The possibilities of applying of models of time domain for the perspective estimates of staff costs of industrial entity for forming analytical information for goals of making management decision are considered.

Key Words: *Staff Costs, Rewards, Human Capital, Time Domain, The Model Of Moving Average, The Model Of Exponential Smoothing, The Perspective Estimate, Management Decisions*

INTRODUCTION

In the changing economic conditions of business, the questions of managing decisions link with the staff costs of industrial entity in perspective are became special actual. Determination the strategy of such management costs means the dynamics of human capital development that is competitive advantage of commercial organization. In this context it is necessary to review costs both on attraction and on allowance and motivation of personnel to effective activity. In this case the investment into accumulation of personnel knowledge, abilities and skills are become important. Many researches point out this fact. J.Octavian and D. Nicoleta note that investment into education is one of way to human capital development and also to entity competitive advantage. V. Sum determines advantages in personnel abilities and skills like one of company development form which based on knowledge. So this form promotes to quality increase and efficiency of activity. In this case the development of personnel stimulation system is necessary, i.e. determination of principles and rules of personnel rewards into interrelation with strategic company goals. Y.H. Hsieh and H.M. Chen note that namely strategic accordance between business strategy and human capital strategy promotes to personnel motivation and effective activity. P. Boxall emphasizes the competitive advantage achievement as interrelation business strategy and system of rewards. B.K. Boyd and A. Salamin clarify that the bonus programs are one of the key aspects for the determination of this link. The future project of that program is a factor of stable company development. Other researchers in particular H.-M. Chen and Y.-H. Hsieh consider the necessity of interrelation personnel incentive bonus with company's life cycle stages. All of that promote to increase company competitiveness. Many specialists in particular M.B. Hargis, D.B. Bradley III, R. Barrett, S. Mayson, J.G. Messersmith

and J.P. Guthrie emphasize that such interrelation is important for companies both on stage of maturity and on origin and formation stages. Because of changes in business the evaluation of personnel rewards strategy is needed in business requirements and as a consequence the system of costs on personnel is also needed. Consequently, as W.-J.A. Chang and T.C. Huang stress the projecting for the future all of important elements of system costs on personnel including all kinds of rewards and personnel incentive bonuses. T.J. Bush has a similar opinion. He maintains that the bonuses system is important factor for increasing efficiency activity of company. This system motivates the personnel to improve their own professional skills; therefore the question of information about the perspectives of personnel bonuses system development is important for company. R. White has a similar view on this question, so he points out the necessity of a strategic approach to a determination of a logical personnel bonuses system. T.-C. Huang emphasized that the link between personnel managing with incentive bonuses is one of the element of managing system of total costs on personnel. D.-S. Wang and C.-L. Shyu share out the main factors of conformity between company developments and influence such link on the effectivity of personnel activity in perspective.

In this way the staff costs project on perspective is one of the key stages of determination of management human capital strategy in accordance with long-term and short-term business tasks. The modeling of dynamics and optimization perspectives trends serves as instruments to achievement goals. The modeling process allows finding out the changing direction of researching object, to optimize its state in future and demonstrate consecutive changes of total staff costs. It is necessary because of many processes which have impact on costs are in perpetual variation. Besides that, the dynamics costs on personnel modeling promotes to determination of changing character of financial resources in perspective directing for attraction, allowance and motivation of personnel on responsibility centers and the company's personnel categories.

METHOD

The necessity of costs on personnel dynamics modeling determines the problem of choice of concrete model of company perspective activity estimate. The information technology modern development allows using different methods of economic and statistic researches in the field of managing industrial company. In particular, it allows managing by innovative activity, finding out factors, which have influence on company's profitability, determination of optimization personnel reward strategy, budgeting of compensating and stimulating costs on personnel. This choice depends on variety factors: presence of data, the period of estimate, accuracy of trend determination and costs on modeling.

One of analytical information qualitative methods is a modeling of dynamic domains, which reflects stable trends of researching object. The costs on personnel are complex for regulation because of its changing in real calculation. In the same time that costs stable enough in long-term perspective, i.e. it's changing under the effect of transformation of forms and methods of attraction and personnel allowance. As a rule, such changes of company are consecutive with lack of interference both on outside (for example: other rates of insurance payments, the order repeats from large buyers, the appearance on strong competitor's market, high level of inflation etc.), and on inside (essential staff reduction, changing in professional personnel staff, essential corrections of tariff rates, piecework payments and salary and etc.).

In this way, the expediency of time domain application for the determination of costs on personnel character determines by dynamic rows, which allow estimating costs with goal of

finding out the trend of its changing. This is made in terms of costs planning on to follow accounting period (for example: month, quarter, year etc.) and also for correction of current plan and determination of managing of company human capital.

On the whole, depends on current goals the different models of time domain can be used. In our opinion, for the perspective estimation of costs on personnel expediently to use such models as: a) smoothing fluctuations and allocating the main tendencies of change of level of a row; b) the adaptive models considering various value of a temporary row.

The simple moving average model, which belong to first type of dynamic rows are made on the base of value averaging of researching object for few last periods. This model doesn't allow getting exact direction of events development. It more applies for the data with small accidental errors from constant or trivial changing indicator where the last observations have a weight as previous. For removing such shortcoming, the application of weighted moving average model is possible. This model is based on the idea about that the later data have larger weight than earlier.

For the data processing of time domain, the last period information is more important, i.e. for estimation costs on personnel it is necessary to know about current trend development but not about average trend from researching period of times. Namely in this context the information is estimated with using of exponential smoothing model, which allows to take into account different information value of time domain level and to eliminate the degree of obsolete primary data. It is possible because of in terms of factual value addition the error of project value is estimated (difference between real and planned value). This error by means of feedback comes to model and is considered according to process of transformation from one state in another. Thus, the self-correcting model which quickly reacts to conditions changes through the results accounting received during the previous action is determined. Owing to the specified properties, in our opinion, the model of exponential smoothing is most pertinent when forming information for adoption of management decisions.

RESULT

We investigate methodical methods of time domain models application for a perspective assessment of staff costs on the example of one of the largest Russian enterprises of petrochemical field.

Mathematically value of staff costs for future period can be expressed through model of the weighed moving average as follows:

$$f_k = \frac{x_{k-1}w_{k-1} + x_{k-2}w_{k-2} + \dots + x_{k-n}w_{k-n}}{w_{k-1} + w_{k-2} + \dots + w_{k-n}}, \quad (1)$$

or

$$f_k = x_{k-1}w_{k-1} + x_{k-2}w_{k-2} + \dots + x_{k-n}w_{k-n}, \quad (2)$$

$$\sum_{i=k-n}^{k-1} w_i = 1$$

$$\text{Where: } w_i = \frac{w_i}{w_{k-1} + w_{k-2} + \dots + w_{k-n}}; \quad (3)$$

f_k – value of the estimated (projected) staff costs for k period;

x_{k-i} – staff costs for $k-i$ period;

w_{k-i} – weights, reflecting the level of influences of x_{k-i} sum of staff costs on the size of staff costs estimated by x_k ;

n – quantity of components.

At the same time, it is supposed that w_i doesn't increase. It reflects our opinion that than in the past are spaced far apart values of staff costs from the projected (estimated) size, subjects less it influences on future x_k value of size of costs on personnel. The quantity of components is accepted by us equal three ($n = 3$).

Analytical calculations need to be performed, leaning on primary values of costs on personnel for the research period and on a certain combination of scales. On the found optimum set of scales, it is possible to estimate in the long term costs on personnel for the next period on the enterprise or structural division: a) in general, without breakdowns on groups of costs on attraction and the personnel allowance; b) separately by types of expenses and further by its summarizing to calculate the total projected value of costs on personnel on the enterprise or structural unit.

We offer to allocate the following groups of scales:

$$w_1 = 0,8 ; w_2 = 0,1 ; w_3 = 0,1$$

$$w_1 = 0,6 ; w_2 = 0,3 ; w_3 = 0,1$$

$$w_1 = 0,5 ; w_2 = 0,4 ; w_3 = 0,1$$

$$w_1 = 0,4 ; w_2 = 0,4 ; w_3 = 0,2$$

$$w_1 = 0,7 ; w_2 = 0,2 ; w_3 = 0,1$$

$$w_1 = 0,6 ; w_2 = 0,2 ; w_3 = 0,2$$

$$w_1 = 0,5 ; w_2 = 0,3 ; w_3 = 0,2$$

$$w_1 = 0,4 ; w_2 = 0,3 ; w_3 = 0,3$$

One of the problems arising at application of this model is the question of optimum combination of scales determination. For this purpose, we recommend calculation of the modules differences sum by following formula:

$$\sum_{k=4}^{12} |x_k - f_k|, \quad (4)$$

where: x_k – costs on personnel for k period;

f_k – has the same value as in a formula 2.

The received value is accepted to a deviation between the actual and planned value of costs on personnel for every period. By means of comparison of numbers, proceeding from the size of the values sum modules calculated by a formula 4 the optimum set of scales among above-stated is defined. We accept that the optimum combination of scales is a set with the smallest sum.

We will present calculations for a producing department of plant on production of butyl rubber of the petrochemical enterprise on the basis of primary data for twelve periods. As the chosen quantity of components equally three, the first design value of costs on personnel calculates for $k=9$ period according to a formula 2. According to this formula values of costs on personnel on each combination of scales are estimated. And, considering the smallest value of modules differences, according to a formula 4 is defined that the most optimum set of scales is the following group of scales: $w_1=0,4$; $w_2=0,3$; $w_3=0,3$.

The design size of costs on personnel of a producing department of plant on production of butyl rubber of the petrochemical enterprise for k period at this combination of scales will be following:

$1\,036\,107,33 \text{ rbl.} \times 0,4 + 911\,144,06 \text{ rbl.} \times 0,3 + 828\,463,43 \text{ rbl.} \times 0,3 =$
 $936\,325,48 \text{ rub.}$

The carried-out calculations are presented in the table 1.

Table 1
STAFF COSTS PERSPECTIVE ASSESSMENT OF A PRODUCING DEPARTMENT OF BUTYL RUBBER PRODUCTION PLANT OF THE PETROCHEMICAL ENTERPRISE AT AN OPTIMUM COMBINATION OF SCALES ON THE BASIS OF CALCULATION OF THE SUMS OF DIFFERENCES OF MODULES OF A ROW VALUES

Period	Costs on personnel (rub.)		Deviation (the difference between modules), rub.
	Real value	Planned value	
<i>k-12</i> - period	844219,54		
<i>k-11</i> - period	800140,75		
<i>k-10</i> - period	941371,31		
<i>k-9</i> - period	816723,88	869856,61	53132,73
<i>k-8</i> - period	800889,29	849143,17	48253,88
<i>k-7</i> - period	810445,49	847784,27	37338,78
<i>k-6</i> - period	752856,42	809462,15	56605,73
<i>k-5</i> - period	806700,33	784543,00	22157,33
<i>k-4</i> - period	821833,09	791670,71	30162,39
<i>k-3</i> - period	828464,43	796600,26	31864,17
<i>k-2</i> - period	911144,06	819945,80	91198,26
<i>k-1</i> - period	1036107,33	859546,88	176560,45
<i>k</i> - period	-	936325,48	547273,72

Further we will consider the process of costs on personnel modeling with use of exponential smoothing model. Earlier we specified that this model allows considering a deviation of the previous design size from the actual value. And, thereby to consider the tendency which has developed not on average for all analyzed interval of time, but during the periods approximate to current time.

Mathematically the size of costs on personnel for the next estimated period on the basis of exponential smoothing model is expressed as follows:

$$f_k = f_{k-1} + \alpha(x_{k-1} - f_{k-1}), \quad (5)$$

Where: f_k, x_{k-1} – have the same value, as in a formula 2;

α – the smoothing coefficient defined empirically.

Value of a α constant defines extent of smoothing and is subject to the condition $0 < \alpha < 1$ and, as a rule, is selected by a universal trial and error method. It is connected with the fact that with reduction α the deviation of exponential average decreases and increases unlike dispersion of a row. Therefore, it is necessary, on the one hand to increase the weight of fresher supervision (at increase α), and on the other hand, for alignment of casual deviations size α should be reduced. These requirements are in contradict. In this regard search of compromise size α makes a problem of model optimization.

We will consider the possibilities of this model application for a perspective costs on personnel assessment of the same petrochemical enterprise and compare the received results with the values calculated by means of model of the weighed moving average. When forming information about costs on personnel of the research enterprise on their groups the quantity of components, as well as in the previous case, is accepted equal three ($n = 3$).

Because of the constant α is defined experimentally, possible sizes of costs on personnel groups for k period are calculated proceeding from values $\alpha = 0,1$; $\alpha = 0,2$, etc. to $\alpha = 0,9$. Further the sizes of the modules differences sum like as $\sum_{k=4}^{12} |x_k - f_k|$, taken for distance between the actual and estimated (design) values are counted. After that by the way of direct comparison of these sizes the optimum coefficient of smoothing α between values from 0,1 to 0,9 is defined. At the same time, we accept the value of coefficient of smoothing as the number with the smallest sum. Taking into account optimum value α possible sizes of costs on personnel on its separate groups are established, and for each group of expenses the coefficient of smoothing is selected by the empirical way separately. Results of a perspective assessment of costs on personnel with use of exponential smoothing and moving average models are presented in table 2.

Table 2
STAFF COSTS PERSPECTIVE ASSESSMENT OF A PRODUCING DEPARTMENT OF BUTYL RUBBER PRODUCTION PLANT OF THE PETROCHEMICAL ENTERPRISE ON THE BASIS OF MODELS OF THE WEIGHED SLIDING AVERAGE AND EXPONENTIAL SMOOTHING

Indicator	Weighted moving average model		Exponential smoothing model		Deviation of planned value (rub.)
	Optimum group of weights (w)	Planned value for k period, rub.	Smoothing coefficient (α)	Planned value for k period, rub.	
1	2	3	4	5	6=5-3
1. Salary and piecework payment	0,8; 0,1; 0,1	47 004,61	0,9	47 176,87	172,26
2. Overtime Payments	0,8; 0,1; 0,1	115 721,16	0,9	116 852,14	1 130,98
3. Bonus	0,6; 0,3; 0,1	605 661,27	0,6	603 887,56	-1 773,71
4. Social Charges	0,4; 0,3; 0,3	97 771,31	0,3	93 284,24	-4 487,07
5. Reserve For Vacations	0,8; 0,1; 0,1	1 375,00	0,9	771,75	-603,25
6. Compensation Payments	0,5; 0,3; 0,2	10 889,00	0,6	12 196,49	1 307,49
7. Working Clothes and Equipment of Household Rooms	0,4; 0,3; 0,3	2 321,00	0,4	4 289,68	1 968,68
8. Costs on Workers Relocation	0,5; 0,4; 0,1	86 356,42	0,2	68 951,20	-17 405,22
9. Incentive Gifts to Workers	0,8; 0,1; 0,1	1 954,00	0,9	2 032,90	78,9
10. Costs of personnel training	0,8; 0,1; 0,1	300 854,01	0,9	306 832,67	5 978,66
Total Costs on Personnel	-	1 279 907,78	-	1 266 275,50	-13 632,22

By comparison of costs on personnel perspective assessment results of the research division of the petrochemical enterprise which is carried out with use of two different models of time domain it is visible that at exponential smoothing on all levels of a row the average values are received. It has an impact on the accuracy of the end result. It is connected with the fact that at exponential smoothing all previous supervision are considered, and previous supervisions are

considered with the greatest possible weight and preceding it – with the smallest. Thus, earlier supervision has impact on the estimated (projected) values with the minimum statistical weight. In this regard the model of exponential smoothing allows receiving an assessment of costs on personnel trend parameters. This trend finds out not the average level of the research process, but the tendency created by the time of the last supervision that increases reliability of the carried-out analysis.

CONCLUSION

For modeling dynamics of costs on personnel on the basis of the analysis of time domain, it is necessary to apply the methods increasing quality of the end results – more flexible in the characteristic of the research processes, simple from the point of view of computing operations and considering the character of the direction which has developed by the time of the last supervision.

Models of time domain can be applied not only at a perspective assessment of costs on personnel. Measurement of levels of a row and tendencies of its variation allows defining stability of a temporary number of costs on personnel that is existence of a desirable tendency of development of the analyzed object with the minimum influence of adverse circumstances. Identification of a favorable tendency in costs on personnel dynamics allows to enter corrections into the system of expenses of the enterprise and to optimize its planned values.

Generalizing the above, it is possible to make a conclusion that models of temporary ranks allow to open features and properties of change of costs on personnel trends and to allocate the components of a number of the research expenses forming its level. The considered methods of numerical modeling of costs on personnel dynamics give the chance to estimate research object taking into account its reached level. Also these methods increase analytical properties of the formed information, promote data preparation for adoption of relevant administrative decisions at a principles and rules formulation of workers rewards, and as a result promote to form a company human capital management strategy.

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THE FEATURES OF CREDIT INSTITUTIONS REFINANCING IN THE RUSSIAN FEDERATION DURING THE CRISIS

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ABSTRACT

The article analyses the dependence between the policy of interaction between the banking and real sectors of the economy and the volume of unsecured refinancing funds received by the credit institutions from the Bank of Russia during the banking system crisis using the data from the largest banks in the country. The relationship between the amount of funds received by the credit institutions and the policy of cooperation with the real sector and the population in the area of raising funds and allocation of resources of different maturities was revealed. The analysis was performed during the period of the global financial crisis in 2008-2010. The conclusions of the study reveal weaknesses in the Bank of Russia refinancing system during the crisis of 2008 and allow using this experience in current economic crisis.

Key Words: *Interaction between the Banking and Real Sectors of the Economy, the Bank of Russia Refinancing, Liquidity Crisis, Correlation Analysis, Liquidity Ratios*

INTRODUCTION

In order to identify the main policy of interaction between banks, the real sector of the economy and the population during the crisis, the research about resource allocation of credit institutions, which have shown high activity in receiving the funds from the refinancing procedure of the Bank of Russia in 2008, was conducted. Introduced as part of anti-crisis measures from the Bank of Russia unsecured loans were provided under the Federal Law № 171 - FZ, dated October 13, 2008 "On Amendments to Article 46 of the Federal Law "About the Central Bank of the Russian Federation (Bank of Russia)" and according to the regulations of the Bank of Russia on October 16, 2008 №323-P "On the provision of unsecured loans by the Bank of Russia to Russian credit institutions".

This article will attempt to determine the reasons of the failure of the Bank of Russia measures to support the real sector of the economy and the population during the crisis through the financing of the banking system.

METHOD

Correlation analysis as the main research method was conducted. The method allows determining the relationship and its degree between the studied variables. The formula for calculating the Pearson correlation coefficient as follows:

$$r_{xy} = \frac{\sum(x_i - \bar{x}) * (y_i - \bar{y})}{\sqrt{\sum(x_i - \bar{x}) * \sum(y_i - \bar{y}) * (n - 1)}}$$

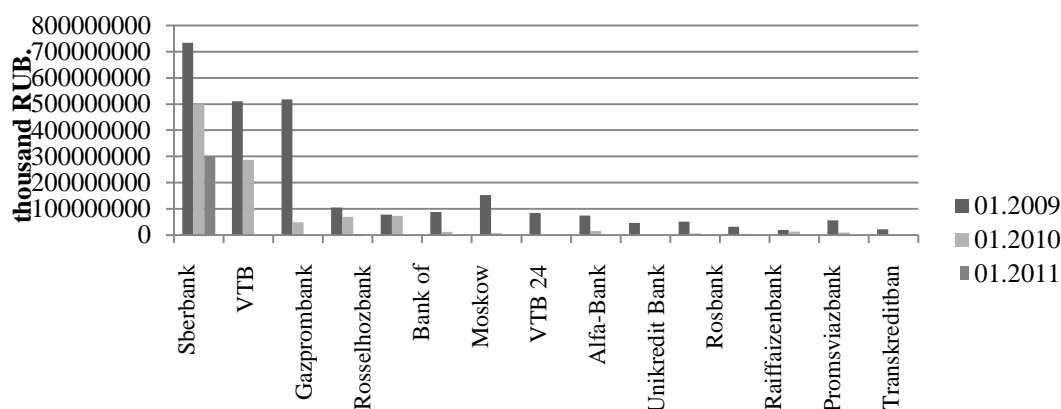
Where x_i – value of variable x , y_i – value of variable y , \bar{x} – arithmetic mean of variable x , \bar{y} – arithmetic mean of variable y .

Coefficient varies from -1 to 1; the correlation degree is determined by Cheddok scale.

RESULT

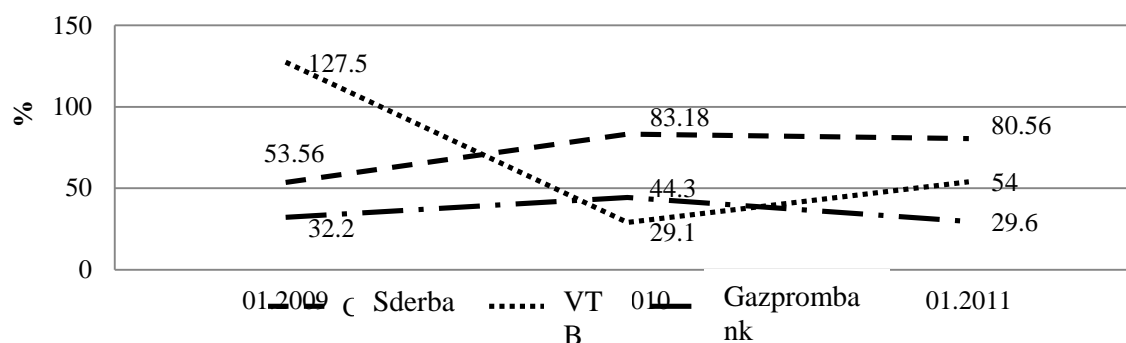
The greatest interest to the unsecured auction was shown by such credit institutions as "Sberbank of Russia", JSC "VTB Bank" and OJSC "Gazprombank", which in November 2008 attracted 80% of the unsecured refinancing of the Bank of Russia (Fig. 1). These are backbone banks in the Russian financial system, which attract the biggest share of deposits and also support the individuals and real sector of the economy.

Figure 1
DYNAMICS OF UNSECURED LOANS OF THE BANK OF RUSSIA IN THE LIABILITIES OF CREDIT INSTITUTIONS



In this context the study of liquidity ratios dynamics and interaction between these banks with the real economy becomes relevant. Since in 2008-2010 one of the most used methods of determining the level of liquidity of credit institutions were liquidity ratios of the Bank of Russia, such indicators as instant, medium and long-term liquidity ratios and volume of loans and deposits to individuals and legal entities by maturity will be discussed in more detail.

Figure 2
DYNAMICS OF INSTANT LIQUIDITY RATIOS CHANGE



Instant liquidity ratio of such credit institutions as Sberbank and Gazprombank during the period from 01.01.2009 to 01.01.2010 shows a positive trend, while the VTB Bank experienced a sharp decline, which was replaced by a significant increase on 01.01.2011.

If we consider the correlation analysis of the impact of Bank of Russia loans to certain performance indicators and instant liquidity ratios of studied credit institutions, it may be noted that the highest correlation of the selected indicators visible for Sberbank of Russia, followed by VTB and Gazprombank.

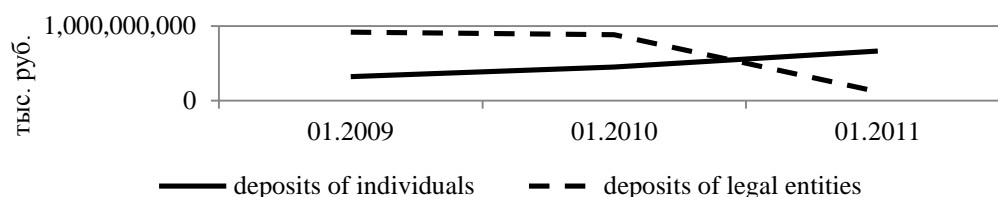
Instant liquidity ratio of Sberbank of Russia has the highest correlation with the volume of loans taken from the Bank of Russia, but this relationship is negative (-0.85), which suggests increase of the Instant liquidity ratio while reducing the volume of unsecured lending (Table 1). It should be noted that the return of the amounts of this type of refinancing increases the activity of credit transactions on the accounts as a whole and deposit transactions on the accounts of individuals.

Table 1
CORRELATION ANALYSIS OF THE IMPACT OF BANK OF RUSSIA LOANS ON SHORT-TERM INDICATORS OF CREDIT INSTITUTIONS

	Sberbank	VTB Bank	Gazprombank
Credits to individuals	-0,504255457	-0,753176789	-0,722886398
Credits to legal entities	-0,990672199	0,826291619	0,944543042
Deposits of individuals	-0,981956462	0,881226553	-0,789811522
Deposits of legal entities	0,86217133	-0,666939065	-0,618090712
Instant liquidity ratio	-0,847631975	0,666278773	-0,267562692

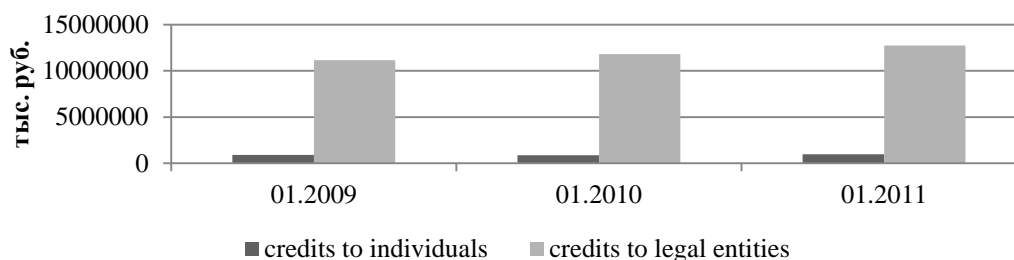
In our opinion, this happened due to the fact that the return of the funds received from the Bank of Russia leads to the need of credit organizations to replace these funds with other types of borrowed resources. That means the increase of the volume of deposits on the accounts of individuals (- 0.98) by increasing the attractiveness of payroll and other projects. However, the funds in the accounts of legal entities have a reverse trend (0.86) (Figure 3).

Figure 3
THE DYNAMICS OF DEMAND DEPOSITS OF SBERBANK OF RUSSIA BY THE TYPE OF CUSTOMER



At the same time, the need for placement of attracted funds is increasing, therefore the volume of lending to legal entities (-0.99) and individuals (-0.5) is increasing also (Figure 4).

Figure 4
OVERDRAFT DYNAMICS OF SBERBANK OF RUSSIA BY TYPE OF CUSTOMER



The opposite situation is observed in terms of short-term activities of VTB Bank. Here the Instant liquidity ratio ratio has a less strong and positive relationship with the amount of unsecured lending by the Bank of Russia (0.67), which indicates a certain degree of dependence of the bank regarding short-term activities from refinancing during the global financial crisis. So, with a reduction of attracted funds from the Central Bank of the Russian Federation, VTB Bank is reducing the volume of overdraft to legal entities (0.83), at the same time reducing dynamics of raising funds in the accounts of individuals (0.88) and increasing the volume of deposits of legal entities (-0.67).

Table 2
DYNAMICS OF INDICATORS OF SHORT-TERM PERFORMANCE OF VTB BANK
Thousand rubles

Indicator	Credits to individuals	Credits to legal entities	Deposits of individuals	Deposits of legal entities
01.2009	779	7 921 325	5 945 262	124 860 041
01.2010	605	348 009	2 291 469	317 426 685
01.2011	1 244	370 122	1 825 628	268 857 708

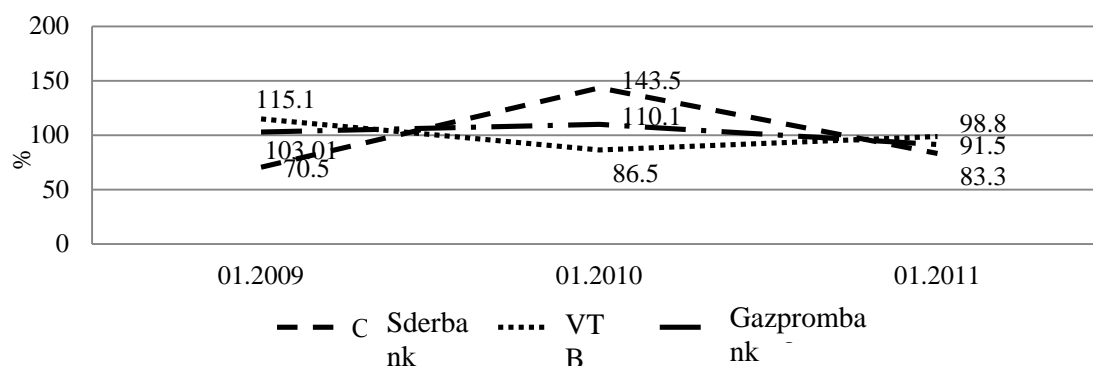
On January 1, 2010, in terms of overdraft to legal entities of VTB Bank, a sharp decline from 7.9 trillion rubles up to 348 billion rubles was observed, and on January 1, 2011, this indicator increased slightly to 370 billion rubles. We can conclude that the credit institution

increased its volumes of commitments at a relatively low level of assets in this category. And in times of crisis a short-term corporate lending was mainly done at the expense of the Bank of Russia refinancing, which further led to a sharp drop in instant liquidity ratio during their return.

It should be noted that in Gazprombank the correlation between the Instant liquidity ratio and the amount of funds received from the Bank of Russia is absent, since the coefficient is -0.27, respectively, this resource is not used in the short-term activities of Gazprombank. Thus, analysis of the relationship between these parameters is inappropriate.

With regard to current liquidity ratio (N3), Fig. 5 shows that the greatest dynamics is observed for Sberbank of Russia, but on 01.01.2011 the performance of all three banks account is about 90%.

Figure 5
DYNAMICS OF CURRENT LIQUIDITY RATIOS CHANGE



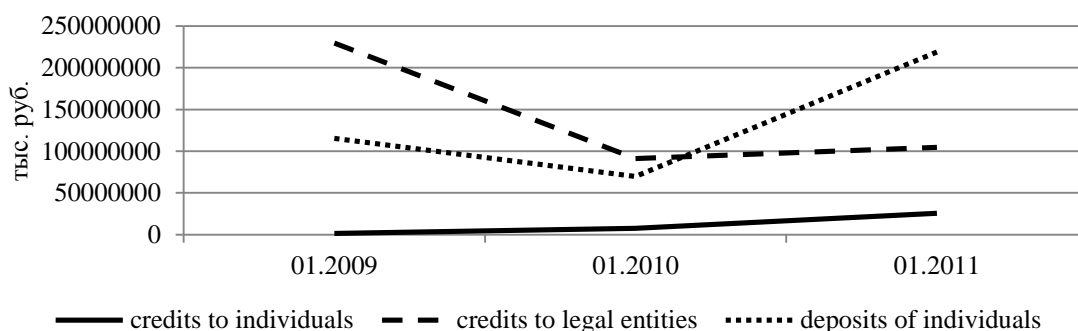
The current liquidity ratio of Sberbank of Russia, as well as Instant liquidity ratio, shows a negative correlation (-0.74), indicating the decrease in the dynamics and current types of operations against the backdrop of fundraising of the Bank of Russia. Negative impact on the level of -0.84 is also revealed in Gazprombank. VTB Bank is not considered, since it has a marginal relationship with the analyzed parameters (Table 3).

Table 3
CORRELATION ANALYSIS OF THE IMPACT OF LOANS FROM THE BANK OF RUSSIA ON THE CURRENT ACTIVITIES OF CREDIT INSTITUTIONS

	Sberbank	VTB Bank	Gazprombank
Credits to individuals	-0,949376649	0	0,051058636
Credits to legal entities	0,843072381	-0,767701803	0,907182204
Deposits of individuals	-0,644550732	0,999999441	-0,037221055
Deposits of legal entities	0,497454973	-0,716977192	-0,193917747
Current liquidity ratio	-0,735437277	0,52299815	-0,838460406

According to Sberbank it may be noted that the funds of the Bank of Russia on the current operations were aimed at corporate lending (0.84), while loans to individuals were suspended, and the amount of their deposits decreased (Fig. 6).

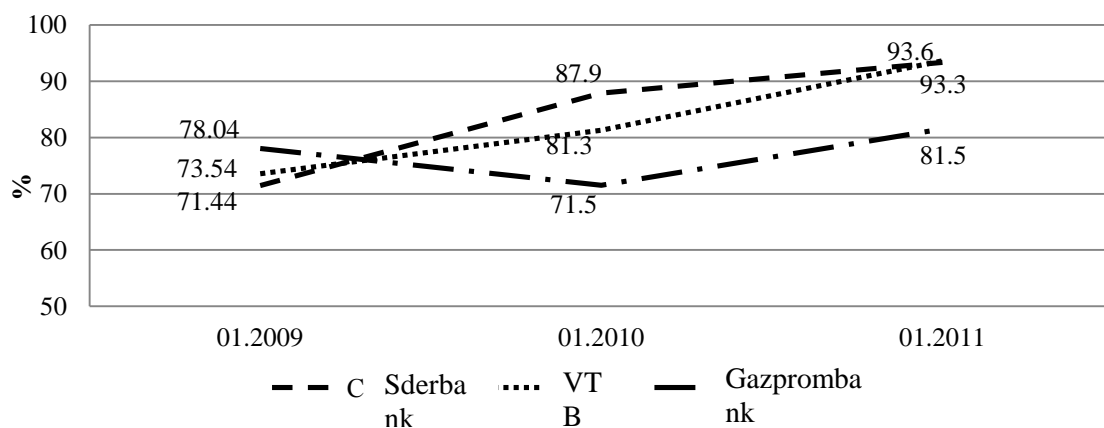
Figure 6
COMPARISON OF THE DYNAMICS OF CURRENT LOANS AND DEPOSITS OF INDIVIDUALS AND LEGAL ENTITIES OF SBERBANK CURRENT LOANS



With regard to Gazprombank it should be noted that funds of the Bank of Russia were used to provide loans for legal entities (0.91), but the activity of the credit organization increases together with decreasing indicator of volume of accepted unsecured loans.

As for the long-term liquidity ratio, there is the dynamics of growth in such banks as Sberbank and VTB; Gazprombank shows minor variations (Fig. 7).

Figure 7
DYNAMICS OF LONG-TERM LIQUIDITY RATIOS



Regarding the correlation analysis it should be noted that long-term liquidity ratios of Sberbank of Russia and VTB Bank have a high relationship with the volume of unsecured loans of the Bank of Russia, while in Gazprombank again low coefficient (0.55) is observed, respectively, there should be discussion about the impact that does not allow to make conclusions about the result.

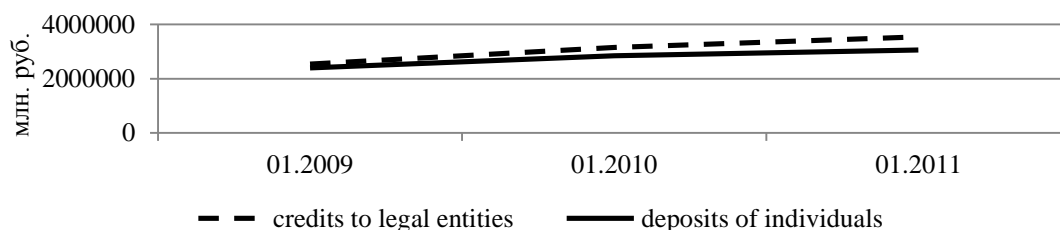
Table 4
DYNAMICS OF LONG-TERM ACTIVITIES INDICATORS OF THE CREDIT INSTITUTIONS

	Sberbank	VTB Bank	Gazprombank
Credits to individuals	0,097074421	0,902696161	-0,380359397
Credits to legal entities	-0,996571069	0,0001698	-0,967714179
Deposits of individuals	-0,988120509	-0,999193669	-0,859946823
Deposits of legal entities	-0,03790463	-0,913610327	-0,91019253
Long-term liquidity ratio	-0,968608469	0,999199823	0,554795898

The situation of strong inverse relationship between the long-term liquidity ratio and funds of refinancing of the Bank of Russia (-0.97) is again observed in Sberbank. That means the bank also increases the activity and long-term types of operations while reducing the volume of funds of the Central Bank of the Russian Federation in its liabilities.

Connection with the indicator in this case exists in long-term corporate loans (-0.997) and long-term deposits of individuals (-0.988). Both coefficients are negative, that is, the bank begin to issue risky long-term resources to legal entities only during the periods of the Bank of Russia refunds and replaces these liabilities by increasing the attractiveness of long-term deposits for individuals (Fig. 8).

Figure 8
COMPARISON OF THE DYNAMICS OF LONG-TERM CORPORATE LOANS AND LONG-TERM INVESTMENTS OF INDIVIDUALS IN SBERBANK



According to the VTB Bank correlation analysis, the funds of the Bank of Russia were used to a greater extent in order to maintain long-term liquidity ratio (0.999). In the period of entitlement of the funds in the credit institution, decline in raising funds from both the legal (-0.91) and from individuals (-0.999) is observed. Additionally, the funding for individuals (0.9) increased, however, since the activities of VTB Bank aims to work with legal entities, this growth is negligible. Accordingly, under this credit institution can be concluded, that using the funds from the Bank of Russia together with outflow of long-term resources of individuals, VTB Bank supported the long-term liquidity ratio ration at the required level.

CONCLUSION

Thus, we can conclude that the greatest need for funds of the Bank of Russia was noticeable in VTB Bank, which spent the received resources to maintain Instant liquidity ratio and long-term liquidity ratio, while there is considerable dependence of the bank on the received unsecured loans, which indicates the presence of certain lack of liquidity problems in the credit institution.

Relatively Sberbank of Russia it can be argued that the credit institution had no urgent need to refinance its activities. This conclusion follows from the fact that all the correlation indicators inversely proportional to the volume of loans from the Bank of Russia. That means, while increasing this indicator, the bank reduced the amount of their own activities, and during the time of refunds to the Central Bank of Russia once again increased.

Gazprombank used the received funds for the medium-term corporate lending. That means that obtained resources were necessary for the bank to maintain the current liquidity ratio.

Accordingly, during the crisis credit institutions have used received refinancing funds from the Bank of Russia aimed at supporting the real economy and the population to save their own activities. Long-term financing for the period of 2009 was actually suspended and started to renew at sufficiently low rate only in 2010.

At the same time, refinancing funds of the Bank of Russia were intended to support the real sector of the economy and population during the crisis. In practice, they have been used to maintain the activity of the banks. Accordingly, the main problem of refinancing during the crisis of 2008 was a discrepancy of the objectives among the Central Bank and commercial banks and the lack of interaction between banks, real sector of the economy and population. In the current situation it is necessary to take into account the mistakes of the 2008 crisis, to limit the possibility of speculation of credit institutions, to encourage them to interact with the real sector of the economy and population. Thus, considering the retrospective review, in the current economic situation it is possible to create an effective and efficient policy of refinancing.

During the current economical situation it is important to use the experience from crisis of 2008. Government has allowed now investing no more than 10% of the Russian National Wealth Fund in the backbone banks, where Sberbank of Russia, VTB Bank and Gazprombank are part of these banks. This will help to increase the banking system capital up to 13%.

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TRANSPORT INFRASTRUCTURE AS A DRIVER OF SUSTAINABLE DEVELOPMENT OF REGIONAL ECONOMIC SYSTEMS

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ABSTRACT

The purpose of this research is to study the dependence of social and economic development on the regional transport infrastructure. The authors' position is based on the fact that it has a complex impact both on the general vector of the region's development, and on the functioning conditions of individual economic agents. This influence is manifested through ensuring the needs of spatial economic structures in advanced development; coordination of social and economic processes development; adaptation of global economic processes in transport sphere to regional conditions, as well as meeting the needs of economic agents in transport and logistics services. The study presents a methodology of integral multi-level assessment of the development level of regional infrastructure based on the capacity of the transport system, covering various aspects of its operation and promoting complex vision about the prospects of its further development; it serves as a basis for calculating the indicator on the example of the Republic of Tatarstan. The methodology enables to evaluate not only the development degree of individual indicators of the regional transport infrastructure, but also the level of its development in general. This approach helps to identify aspects that impede the effective development of transport infrastructure and to take measures to eliminate them. In addition, this technique enables to rank the regions according to the development degree of various functioning aspects of their transport infrastructure.

Key Words: *Regional Transport Infrastructure, the Economy of the Region, Socio-Economic Development of the Region, an Integrated Assessment of Transport Infrastructure, the Development Indicators of Regional Transport Infrastructure*

INTRODUCTION

The regional transport infrastructure represents a framework of operation and long-term development, as well as it forms the level of economic systems in the international transport and logistics services market. In the Russian Federation transport infrastructure plays an important role due to the size of its territory (17 million sq. km) and to the need to cover all the country with transport networks.

Intensive development of innovative processes which ensure the consolidation of the regions necessitates a comprehensive in-depth theoretical and practical study of the development laws of regional transport infrastructures. It should be borne in mind that in terms of economic processes integration, it is important to consider the regional transport infrastructure in close cooperation scheme.

Rapid development of the region's economy depends largely on the development level of its transport infrastructure which has a complex impact both on the general vector of the region's development and on the functioning conditions of individual economic agents. In its turn, the impact of the region's economy on transport infrastructure is manifested through a number of factors including: shaping the demand for transport services; management and regulation of traffic flows in the region; determining the structure of financial support for transport infrastructure development; the presence of material, technical and human resources that are necessary for its development.

The following study is concerned with an integral assessment of the development of regional transport infrastructure, as well as with measuring the impact of its development on socio-economic indicators of the region.

LITERATURE REVIEW

Recognizing the significance of the regional transport infrastructure to ensure sustainable development of the economy has caused considerable scholar interest in this problem. Russian and foreign experts considered its various aspects. Early 1990s saw active theoretical and empirical study of infrastructure impact on economic growth, the level and quality of life of the population. One of the first works that attracted attention to this issue, belonged to Aschauer D. who linked the slowdown in US economic growth to a reduction of investment in infrastructure. Researches in this area were continued by P. Evans and G. Karras, D. Canning and P. Pedroni, which believed that to determine the optimal conditions for economic development it is necessary to analyze the link between the availability of micro-economic infrastructure and the nature of the production process.

Subsequently, international studies revealed the relationship between the financing of infrastructure and increasing the efficiency of firms and regions. Thus, according to studies by P. Arbués, J.F. Baños & M. Mayor, a direct impact of transport infrastructure on the economy manifests itself through an increase in employment in the construction sector during the development of infrastructure, reducing fuel consumption, saving time, reducing environmental problems. While indirect effect includes productivity growth of the regional economy, optimizing the location of companies, increasing the efficiency of the household, the change in real estate prices.

Rodrigue & Notteboom argue that the induced effect of transport infrastructure on economic development is the result of its impact on employment and growth of surplus value. They view the induced impact as the result of the multiplier effect where the price rise for goods and services, extension of offering range, as well as other related consequences are the result of economic operations of firms which use efficient transport services. Furthermore, these authors believe that the transport infrastructure provides time and cost savings.

According to Lakshmanan, improved transport infrastructure tends to reduce the average travel time, transport costs, and, consequently, to increase transport accessibility. This in turn leads to a decrease in the marginal cost of producers and an increase in the mobility of households and the demand for goods and services.

It should be noted that the improvement of existing or the introduction of new infrastructure can have both positive and negative consequences. For some economic sectors growth in the availability of products and services can lead to increased competition in the domestic market, reducing local productivity, profitability and employment.

Transport infrastructure in itself is not a sufficient condition for economic development.

At the same time, its lack can be a deterrent to it. Low quality of transport services may have a negative impact on the competitiveness of regions and businesses.

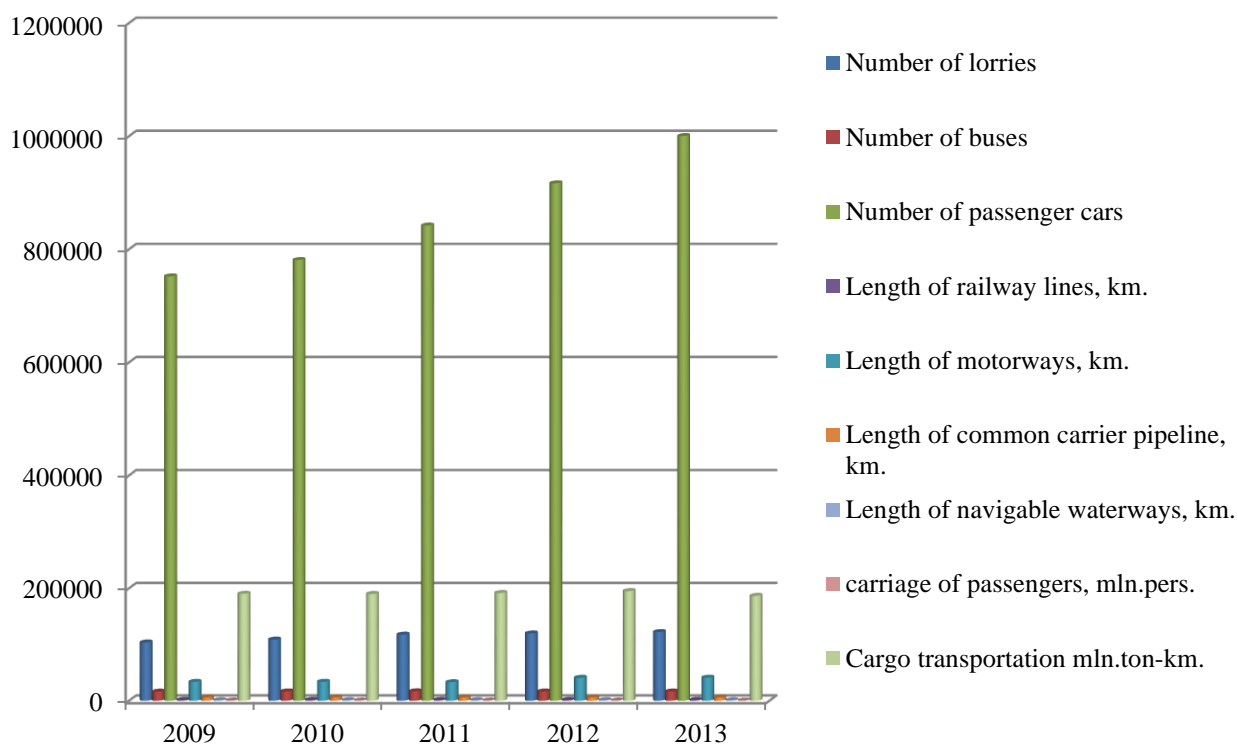
From this brief review of the literature it can be concluded that so far researchers were interested mostly in the impact of infrastructure on the macro- and micro-economic development, while the problems of infrastructure development and the interdependence of mesolevel economic systems are paid insufficient attention. In this paper we consider the development of transport infrastructure as one of the essential factors of economic growth in the region, which raises the need for its comprehensive assessment and analysis.

DEPENDENCE ANALYSIS OF THE ECONOMY OF THE REPUBLIC OF TATARSTAN ON THE LEVEL OF TRANSPORT INFRASTRUCTURE DEVELOPMENT

To date, the Republic of Tatarstan is the leader of "Volga-Kama" development area, a most important area of economic growth of the Russian Federation. The Republic of Tatarstan ranks the third in the ranking of Russian competitive regions, calculated on the basis of AV Regions Competition Index (RCI) methodologies.

Tatarstan has a developed transport infrastructure, including road, rail, air and water transport. The advantage of the region is a natural water endowment consisting of the Volga and Kama rivers. In addition, the republic has an established and extensive pipeline network for oil and gas transportation. Over 2009 to 2014 the positive dynamics of key indicators of regional transport infrastructure is observed (Fig. 1).

Figure 1
MAIN INDICATORS OF TRANSPORT INFRASTRUCTURE OF THE REPUBLIC OF TATARSTAN



In order to justify the empirical dependence of the main socio-economic indicators of the Republic of Tatarstan on the level of its transport infrastructure development, a model of correlative regression analysis was built. As independent variables the model included factors that characterize the transport infrastructure development, such as the number of vehicles, the length and density of railways, the intensity of passenger and freight traffic.

An indicator that best represents the contribution of a particular economic activity in the region's development is its contribution to the region's GRP. Therefore, GRP of Tatarstan was considered as the first dependent variable. The contribution of "Transport and Communication" industry to the gross product was taken as a second dependent variable. The modeling resulted in coefficients of interdependence (K), whose value ranges from (-1) to 1 (Table 1).

Table 1
INDICATORS OF THE INTERDEPENDENCE OF TRANSPORT INFRASTRUCTURE DEVELOPMENT
AND SOCIO-ECONOMIC INDICATORS OF THE REPUBLIC OF TATARSTAN

	GRP, mln.rub.	Domestic product manufactured by "transport and communications"	Population, thous.people.	Average number of employed in the economy, ths. pers.	Average per capita income (per month), rub.	The subsistence minimum in the average per capita (per month), rubles.	Fixed assets in the economy, mln. rub.	New fixed assets, mln. rub.	Investments in fixed capital, mln. rub.	The volume of work performed by the activity "Construction", mln. rubles.	Agricultural production, mln. rub.	Retail trade turnover, mln. rub.	Credit exposure in the economy, mln. rub.	Balanced financial result in the economy, mln. rub.	Foreign trade turnover, mln. USD
The number of lorries	0,99	0,99	0,91	0,35	0,94	0,96	0,96	0,90	0,96	0,94	0,91	0,95	0,98	0,96	0,99
The number of buses	0,36	0,45	0,11	0,32	0,20	0,36	0,67	0,66	0,24	0,14	0,33	0,20	0,33	0,30	0,58
The number of passenger cars	0,96	0,94	1,00	0,09	0,99	0,97	0,80	0,77	0,99	0,97	0,86	0,99	0,97	0,91	0,88
Length of railway lines, km	0,70	0,58	0,75	0,41	0,76	0,58	0,43	0,31	0,75	0,84	0,65	0,77	0,69	0,80	0,53
Length of motorways, km	0,79	0,70	0,90	0,21	0,89	0,75	0,50	0,41	0,87	0,91	0,65	0,89	0,79	0,82	0,64
The length of roads paved, km.	0,83	0,73	0,90	0,32	0,91	0,76	0,57	0,45	0,89	0,94	0,68	0,91	0,82	0,88	0,70
The density of surfaced roads, km / 1000 km ²	0,83	0,74	0,90	0,33	0,91	0,77	0,57	0,46	0,89	0,94	0,69	0,91	0,82	0,88	0,71
Length of common carrier pipeline, km	0,77	0,77	0,93	-0,28	0,86	0,85	0,53	0,56	0,84	0,82	0,67	0,85	0,81	0,66	0,63
Length of navigable waterways, km	0,69	0,71	0,58	0,44	0,68	0,69	0,77	0,66	0,68	0,60	0,45	0,65	0,66	0,67	0,85
Carriage of passengers, mln.pers.	-0,80	-0,73	0,89	-0,10	0,86	-0,76	0,53	0,49	0,85	-0,91	0,77	0,87	0,82	-0,81	0,61
Haulage, mln. ton-km	0,79	0,79	0,56	0,50	0,61	0,68	0,89	0,87	0,67	0,68	0,90	0,66	0,77	0,80	0,79

In general, there is a high level of dependence of the selected dependent variables on the independent variables. Dependence level of the Republic of Tatarstan's GRP is maximal on the following factors in their order of importance: the number of lorries, number of passenger cars, the length and density of roads paved, the carriage of passengers. One can see maximum dependence of the "Transport and communications" contribution to gross product on the following indicators: number of lorries, number of passenger cars, haulage, length of common carrier pipeline, and the density of roads paved. GRP of Tatarstan depends the least on factors such as length of navigable waterways, and the number of buses. In turn, the gross product produced by activity "Transport and Communications" is associated less with such factors as the length of railway lines and the number of buses.

Thus, it is proved that there is a strong relationship between the GRP of the Republic of Tatarstan and the development of regional transport infrastructure.

RESEARCH METHODOLOGY

It seems appropriate to work out a methodology of integral multi-level assessment of the development level of regional infrastructure based on the capacity of the transport system, covering various aspects of its operation (contribution of the transport infrastructure subjects to the GRP; the demand for transportation services; infrastructure logistics; profitability and financial stability of transport infrastructure subjects; social and demographic conditions for the development of transport infrastructure, financing transport infrastructure) and promoting complex vision about the prospects of its further development.

The technique enables to evaluate not only the development degree of individual indicators of the regional transport infrastructure, but also the level of development in general. This approach helps to identify aspects that impede the effective development of transport infrastructure and to take measures to eliminate them. In addition, this technique enables to rank the regions according to the development degree of various functioning aspects of their transport infrastructure.

An integral indicator of regional transport infrastructure development is calculated on the basis of groups of indicators included in its composition: the contribution of the subjects of transport infrastructure to GRP; demand for transport services; infrastructure logistics; profitability and financial stability of transport infrastructure subjects; social and demographic conditions for the development of transport infrastructure; financing of transport infrastructure (Table 2). The selection of indicators, their distribution by groups and ranking of groups of indicators were considered within hierarchical structure: region – infrastructure - transport infrastructure - financial infrastructure.

Table 2
INDICATORS OF INTEGRAL ASSESSMENT OF THE DEVELOPMENT LEVEL OF
INFRASTRUCTURE IN THE REGION (BASED ON THE CAPACITY OF THE TRANSPORT SYSTEM)

Indicators	Indicator weight	Weight of a group of indicators
1. The share of GRP produced by transport infrastructure subjects		0,2
Gross product produced by transport infrastructure subjects, mln.rub.	0,5	
Exports of transport services, ths. US	0,3	
Imports of transport services, ths. US	0,2	
2. Demand for transport services		0,15
Carriage of passengers all modes of transport, mln. people	0,15	
Passenger turnover of all modes of transport, mln. passenger-km.	0,2	
Cargo transportation by all modes of transport, mln. tons	0,1	
Freight ton-miles by all modes of transport, mln. ton-km.	0,2	
Index of tariffs for cargo transportation, %	0,15	
The volume of paid transportation services, mln. rub.	0,2	
3. Infrastructure logistics	0,2	
Freight rolling stock, units	0,05	
Passenger rolling stock, units	0,05	
Length of railway lines, km	0,1	
Length of common carrier pipeline for oil transportation, km	0,1	
Length of navigable waterways, km	0,05	
Length of motorways, km	0,1	
Density of railways km/1000 km ²	0,1	
Density of paved motorways, km./1000 km ²	0,1	
Density of navigable waterways, km, km./1000 km ²	0,05	
The cost of fixed assets of transport infrastructure organizations, mln.rub.	0,1	
Depreciation of fixed assets of transport infrastructure organizations, %	0,1	
4. Profitability and financial stability of transport infrastructure subjects		0,2
Balanced financial result of enterprises and organizations of transport infrastructure, mln. rub.	0,3	
Ratio of unprofitable organizations of transport infrastructure, %	0,1	
Current liquidity ratio of transport infrastructure enterprises and organizations	0,2	
Working capital financed by equity to total assets ratio of transport infrastructure enterprises and organizations	0,2	
Equity-assets ratio of transport infrastructure enterprises and organizations	0,1	
5. Social and demographic conditions of transport infrastructure development		0,1
Average number of employees of the transport infrastructure, pers.	0,4	
The average monthly nominal wage of employees of the transport infrastructure, rub.	0,3	
Number of cars, pcs. / 1,000 pers.	0,3	
6. The financing of transport infrastructure		0,15
The total investment in fixed assets of organizations of transport infrastructure, mln. rub.	0,6	
The volume of investments made by foreign investors in transport infrastructure, ths.US dollars	0,4	

The group is formed of particular indices. Based on expert assessments each parameter is assigned weight, which characterizes the degree of its impact on the group of indicators as a whole. Generalized values of groups of indicators of regional transport infrastructure development are calculated based on the formula:

$$GI_{RTID} = \sum_{i=1}^n \alpha_i x_i, \quad (1)$$

where GI_{RTID} - group of indicators of regional transport infrastructure development;

α_i - weight of i^{th} indicator;

x_i - i^{th} indicator.

The result of assessing the development of regional transport infrastructure is the integral index calculated by the formula:

$$IA_{TID} = \sum_{j=1}^m \beta_j y_j, \quad (2)$$

where IA_{TID} is integral assessment of the level of regional transport infrastructure development;

β_j - weight of j^{th} group of indicators;

y_j - j^{th} group of indicators.

RESULTS

On the basis of the technique developed an integral indicator of the development level of transport infrastructure of the Republic of Tatarstan is calculated (Table 3).

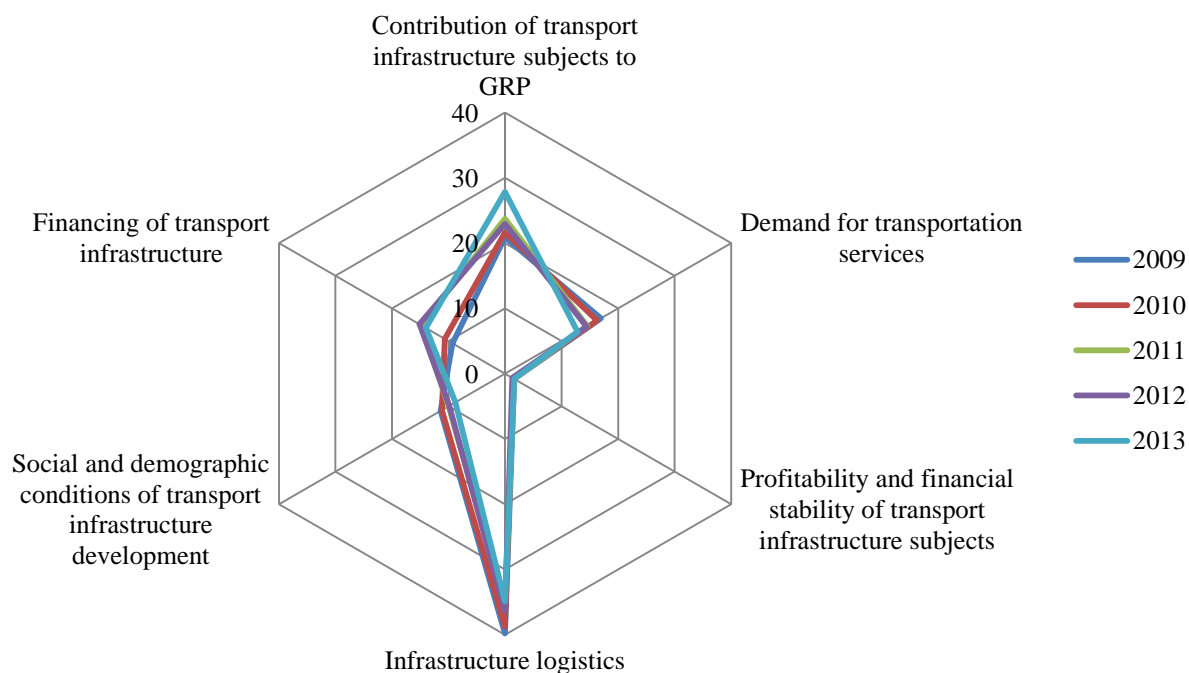
Table 3
INTEGRAL ASSESSMENT OF THE DEVELOPMENT LEVEL OF INFRASTRUCTURE OF THE
REPUBLIC OF TATARSTAN (ON THE BASIS OF THE TRANSPORT SYSTEM CAPACITY)

Group of indicators	2009	2010	2011	2012	2013
Contribution of the transport infrastructure subjects to the GRP	41378,78	45111,60	56863,27	56656,51	75357,76
Demand for transportation services	44851,22	45224,58	46534,63	47532,02	46401,01
Infrastructure logistics	78999,90	80870,56	84690,90	90004,97	94479,83
Profitability and financial stability of transport infrastructure subjects	3181,31	3162,94	3853,78	3196,23	4341,90
Social and demographic conditions of transport infrastructure development	45294,26	46560,50	48008,26	48722,41	47543,86
Financing transport infrastructure	24576,86	29676,04	47490,10	49949,64	50655,86
The overall level of transport infrastructure development	39655,64	41720,16	47986,13	49466,03	54148,82

Positive dynamics of the overall level of transport infrastructure development of the Republic for the period under review is observed. In particular, there was a significant increase in the following indices: the contribution of the of transport infrastructure subjects to the GRP, infrastructure logistics, financing transport infrastructure.

In order to identify the most important groups of indicators that affect transport infrastructure development of the Republic of Tatarstan, a pie-chart was built (Fig. 2).

Figure 2
ASSESSMENT INDICATORS OF INFRASTRUCTURE DEVELOPMENT OF THE REPUBLIC OF
TATARSTAN (TAKING INTO ACCOUNT THE CAPACITY OF THE TRANSPORT SYSTEM)



A pie chart shows that in spite of the steady rise in financing of transport infrastructure, it has a relatively low impact on the infrastructure development of the Republic of Tatarstan. This is an evidence of ineffectiveness of the financial support instruments of infrastructure projects that are used in the region, which may adversely affect the advanced development of the Republic of Tatarstan.

CONCLUSION

Regional development is influenced by many factors, one of which is the quality of transport infrastructure. High transport accessibility of the region contributes to attracting investors, accelerating economic turnover, creating jobs, and optimizing the siting of firms seeking to gain better access to markets.

With the increase in the rate of economic development there is a need to modernize the existing infrastructure and to implement new infrastructure projects. Thus, there are preconditions for further development of transport infrastructure in the territory of the Republic of Tatarstan.

Despite of this, financial support for the transport infrastructure development in the region remains limited and its tools are ineffective. To resolve these problems, it is advisable to pursue a comprehensive policy for transport infrastructure to attract private investors which are able to cover the lack of long-term investment. This requires the implementation of complex innovative instruments and innovative structures, whose primary purpose will be to increase the efficiency of financing transport infrastructure development.

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INTERACTION OF BANKS AND THE REAL SECTOR OF THE ECONOMY AS A FACTOR FOR VOLGA REGION'S SUSTAINABLE DEVELOPMENT

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ABSTRACT

The problem of creating the conditions for mutually beneficial cooperation between financial and real sectors of the Russian economy is becoming essential in modern conditions of globalization. In this article, we attempt to estimate the closeness of interaction between credit institutions and real sector of the economy on the example of the Volga region through the analysis of the various instruments of such interaction. Special attention is paid to deposit and settlement, credit and investment areas. Also the issue of the lack of long-term financing for sustainable economic development is touched. Based on the analysis of a large data array, the article reveals the basic problems in the field of interaction between financial and real sectors of the Volga region economy. Such problems include: lack of long-term financing, the lack of strong relations between entities of the financial and real sectors of the economy and the unattractiveness of the real sector of the Volga region for investments.

Key Words: *Volga Region Economy, Credit Institutions, Real Sector of Economy, Cross-Sectoral Cooperation, Long-Term Financing, Economy's Competitiveness*

INTRODUCTION

The real sector's development is one of the most important factors of Russian Federation's economic stability improving, and the banking system must coordinate this process by means of involving its resources in implementation of the economic entities' investment activity, but to date, this function is performed by the banking system not fully.

The establishment of mutually beneficial partnership of banking and real sectors remains one of the priority directions of the Russian economy's elaboration for many years. At the moment, there is considerable difficulty in this process due to the high volatility of the economic situation in the country, as well as the lack of sufficient incentives for credit institutions and enterprises of the real sector for the establishment of such partnership. Credit institutions aim to rapid and least risky profit, while the real sector needs long-term investment. It should also be noted that credit institutions' credit activities promote primarily those economic areas that were sufficiently profitable: trade and services, as well as mining. At the same time such significant sectors of the economy, as agriculture and manufacturing industries suffer from lack of the financial resources.

Despite the fact that important role in the revitalization of the interaction between credit institutions and the real sector of the Russian economy is given to the regions, analysis of this process in the regional context demonstrates its significant territorial differentiation.

The target of this study is to identify the main trends in the interaction of credit institutions and the real sector of the Volga region's economy. The study is based on modern

methods of data collection, processing, compilation and analysis of statistical material.

The information base of research includes data from official sources, such as the Central Bank of the Russian Federation and the Federal State Statistics Service.

GENERAL INFORMATION

Volga region is one of the most cost-effective regions of the Russian Federation. The number of credit institutions operating in the region during last four years decreased slightly, which can be explained as a consequence of the Russian banking system consolidation process (Table 1).

Table 1
VOLGA REGION'S SECURITY WITH BANKING SERVICES

Region	2010		2011		2012		2013	
	Number of credit institutions	The index of the region's security with banking services	Number of credit institutions	The index of the region's security with banking services	Number of credit institutions	The index of the region's security with banking services	Number of credit institutions	The index of the region's security with banking services
Astrakhan region	5	0.62	5	0.61	5	0.73	5	0.73
Volgograd region	4	0.60	4	0.58	4	0.77	10	0.76
Penza region	2	0.66	1	0.68	1	0.78	1	0.78
Samara region	20	0.99	20	1.01	20	0.92	17	0.92
Saratov region	10	0.67	9	0.69	9	0.85	9	0.88
Ulyanovsk region	4	0.79	4	0.77	3	0.87	3	0.89
Republic of Kalmykia	2	0.53	2	0.60	2	0.76	2	0.79
Republic of Tatarstan	26	0.84	25	0.84	23	0.89	22	0.87
Total:	73		70		67		69	

At the same time it should be noted, that in 2013 the number of credit institutions in the region increased again. Despite the decline in the total number of credit institutions in the region in comparison with 2010, the availability of banking services in the region remains at a high level. So, it grows in Penza, Saratov, Volgograd and Ulyanovsk regions, as well as in the republics of Tatarstan and Kalmykia. In Astrakhan region a decline of this indicator observed in 2011, but in 2012 it rose again, reaching 0.73, and retained that position in 2013. And only in the Samara region the dynamics of this indicator is negative.

Financial results of the credit institutions of the Volga region (Table 2) show the dynamic of the banking sector development in the region.

Table 2
FINANCIAL RESULTS OF THE VOLGA REGION CREDIT INSTITUTIONS (MLN. RUBLES)

Region/ Year	2010	2011	2012	2013
Astrakhan region	78.6	92.4	71.9	146.1
Volgograd region	185.2	248.9	313.9	382.0
Penza region	68.5	53.6	35.6	49.3
Samara region	5 476.2	6 096.1	6 210.3	1 721.9
Saratov region	1 224.1	890.5	1 392.0	1 129.4
Ulyanovsk region	9.0	-100,2	40.5	-15.5
Republic of Kalmykia	8.8	11,7	6.0	-17.3
Republic of Tatarstan	1 817.3	3 804,4	3 827.7	4 475.0
Total:	8 867.7	7 293.0	11 897.9	7 870.9

Positive dynamics of Volgograd and Astrakhan regions credit institutions' profitability is observed. The same can be said of the credit institutions of the Republic of Tatarstan. With regard to Penza, Ulyanovsk region and the Republic of Kalmykia, there is a clear negative trend of this indicator. In 2013 there was a sharp downturn in financial results of Saratov region credit institutions and it almost reached the level of 2011, but the most significant negative trend of profitability is observed in the Samara region.

RESULTS

Russian, including the Volga region, economic potential up building, is inextricably linked with the real economy development, and the banking system must play a coordinating role in this process, participating in the investment activity of economic entities of all forms of ownership. In order to understand the possibility of achieving this goal, the interaction of the credit institutions and the main areas of the Volga region's real sector of economy must be analysed.

The function of cash management services for companies, organizations of various forms of ownership is fundamental among the credit institutions' activities (Table 3). Credit institutions are interested in attraction of customers, both legal entities and individuals for settlement and cash services, and this interest stems from the fact that the resources raised from the bank customers form its funds, which are placed in order to maximize profits for the benefit of bank's customers and shareholders.

Table 3
THE VOLUME OF VOLGA REGION'S ORGANIZATIONS' FUNDS PLACED TO THE ACCOUNTS IN CREDIT INSTITUTIONS (MLN. RUBLES)

Region/ Year	2010	2011	2012	2013
Astrakhan region	7 401	9 254	7 707	9 123
Volgograd region	18 519	25 655	22 870	26 921
Penza region	10 304	12 946	11 451	12 554
Samara region	57 795	64 563	61 890	67 712
Saratov region	21 059	27 170	26 247	28 780
Ulyanovsk region	12 572	14 252	12 108	115 022
Republic of Kalmykia	772	894	896	1 140
Republic of Tatarstan	119 541	124 987	106 962	103 162
Total:	247 963	279 721	250 131	364 414

There is a common trend of changes in the volume of the Volga region's real sector assets, placed to the accounts in credit institutions: a decrease in 2012 and the subsequent increase in 2013 to approximately the level of 2011. Only in the Republic of Tatarstan there is a constant negative dynamics of this indicator and its significant reduction in comparison with 2010 is observed. The amount of funds deposited by the real sector on the bank accounts depends on the economic conditions and customer confidence in the banking system. Consequently, this area of interaction between banking and real sectors of the economy in the face of instability in the Russian financial markets is quite volatile.

As a part of cash management services credit institutions provide a wide range of services, the most popular of which in the Volga region are the following:

1. Opening of bank accounts in rubles and foreign currency;
2. Settlements on behalf of clients in Russia and abroad;
3. Urgent payments of corporate customers on a bank system

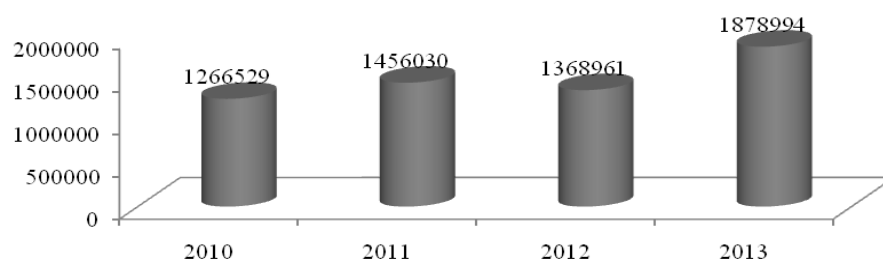
Transfer of funds to the payee's bank account in the shortest possible time. The service provides primary treatment of urgent payment at all stages of the payment on the bank clearing system, and also crediting the payment to the payee in the period from 30 minutes to 3 hours and 50 minutes after the submission of the bank payment document, as well as the possibility of obtaining the payer notice of the exact time of funds' transfer to the beneficiary's account. Also in recent years, many credit institutions of the Volga region began to introduce remote customer service because of the need to improve the traditional services provided in order to be competitive.

Let us turn to the next direction of the interaction between credit institutions and the real sector of economy. The major share in the assets of the Volga region's credit institutions is taken by the credit operations.

The leading companies of the Volga region cannot afford to get large loans somewhere except international capital markets, as domestic credit institutions find it difficult to issue such loans. The role of the banking sector in the investment process is still not as significant, while in developed countries the share of bank lending in the investment averages 20-30%.

The dynamics of loans issued by credit institutions of the Volga region (Figure 1) shows that in the period from 2010 to 2013 the volume of lending to the real sector had gradually increased: in 2013 compared to 2010, the total volume of loans increased by 1.5 times. Despite the fact that in 2012, under the influence of the unstable economic situation in the world volume of lending to the real sector declined marginally, in 2013, it exceeded the performance of 2011.

Figure 1
THE DYNAMICS OF LENDING TO THE VOLGA REGION'S REAL SECTOR, MLN. RUBLES



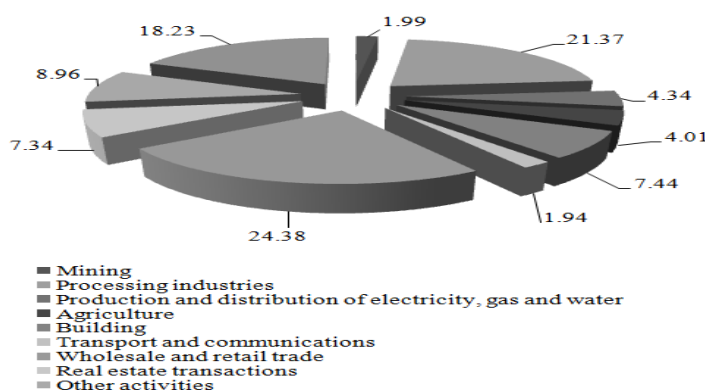
At the same time, the overall downward trend in the share of loans to the real sector in total loan portfolio shows a negative trend. For example, if in early 2010, loans to enterprises accounted for about 60% of the total volume of loans, at the beginning of 2014 the figure was 58.2%. Despite its growth in absolute terms over the last ten years, the share of loans to the real sector is now less than a half of bank assets. Therefore, credit in the economy of the Volga region fulfils its redistributive function not fully at the present time.

The distribution of credit resources between the economic sectors is not conducive to the development of the real economy (Figure 2).

Such branches of the Volga region's economy as wholesale and retail trade (24.38%) and manufacturing (21.37%) remain most attractive for lending. This suggests that the flow of capital from high-yielding sectors of the Volga region, which are gradually exhausting their potential, to the promising high-tech industries is extremely difficult.

It should also be noted that the term structure of credits to the real sector of the Volga region's economy does not meet its growing needs in the long-term financing. In conditions of high volatility of the Russian financial market credit institutions have no incentives for long-term investment, since this kind of active operations entails higher risks.

Fig. 2
LOANS TO THE REAL ECONOMY OF THE VOLGA REGION, BY SECTORS ON 01.01.2014, %



Despite the fact that in recent years there has been some intensification of lending to the real sector of the Volga region, the credit institutions' contribution to its development remains insignificant. More often companies do not resort to credit institutions' funds to invest in projects, thus, over the past 5-7 years services of leasing companies have acquired a sufficiently high demand. Despite the fact that credit institutions are gradually abandoning the lessors' role, many of them are trying to participate in leasing operations through their affiliates.

Another important area of cooperation between credit institutions and the real sector of economy is the attraction of its deposits; as such deposits are remaining one of the most important sources of bank resources. So the volume of deposits of the real sector of the economy enterprises in the credit institutions of the Volga region is gradually increasing (Table 4).

Table 4
THE VOLUME OF ATTRACTED DEPOSITS OF THE VOLGA REGIONS COMPANIES (MLN. RUBLES)

Region/ Year	2010	2011	2012	2013
Astrakhan region	3 147	5 985	3 383	8 602
Volgograd region	9 512	11 640	9 691	10 421
Penza region	3 580	5 373	5 130	6 758
Samara region	27 472	42 458	52 023	67 913
Saratov region	7 610	10 377	13 499	15 964
Ulyanovsk region	5 958	6 503	4 895	6 484
Republic of Kalmykia	642	600	353	272
Republic of Tatarstan	87 212	127 233	122 730	143 861
Total:	145 133	210 169	211 704	260 275

Another important source of credit institutions' funding is the placement of securities, such as certificates of deposit and savings, bonds (Table 5).

Table 5
THE VOLUME OF SAVINGS CERTIFICATES AND BONDS, ISSUED BY CREDIT INSTITUTIONS (MLN. RUBLES)

Region	Deposit certificates			Savings certificates			Bonds		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
Astrakhan region	0.0	0.0	0.0	101.8	824.8	1293.8	0.0	0.0	0.0
Volgograd region	0.0	0.0	0.0	168.6	2 724.0	4044.2	0.0	0.0	0.0
Penza region	3.3	0.1	0.1	156.3	618.5	1011.0	0.0	0.0	0.0
Samara region	196.7	240.0	11.2	356.7	4 576.6	4046.1	14 644.4	24 642.1	30303.5
Saratov region	0.5	0.0	2.1	101.4	1 520.5	2891.0	0.0	0.0	0.0
Ulyanovsk region	3.4	38.5	45.2	150.3	820.0	1220.7	0.0	0.0	0.0
Republic of Kalmykia	0.0	0.0	0.0	2.0	109.2	123.8	0.0	0.0	0.0
Republic of Tatarstan	52.0	313.5	31.5	33.0	3 964.7	4934.2	14 542.9	24 312.1	32964.3
Total:	255.9	592.1	90.1	1 070.1	15 158.3	19 564.8	29 169.3	48 954.2	63 267.8

Credit institutions of the Volga region use deposit certificates extremely inactive. Thus, the credit organizations of the Astrakhan and Volgograd regions, and also of the Republic of Kalmykia don't use this type of securities for attraction of additional resources at all. Even less popular type of securities are bonds: during the considered period, this type of securities was only used by credit institutions of the Samara region and the Republic of Tatarstan. The most popular among the Volga region's credit institutions type of securities are savings certificates, for which there is a positive trend during the period under review is observed.

Despite the fact that in connection with the gradual development of the Russian securities market this type of interaction between the banking and real sectors of the economy of the region becoming more and more attractive for banks, currently the securities' market potential of raising the additional resources is not used by credit institutions to the full.

CONCLUSION

The interaction of banking and real sectors is gradually entering a new phase, but quite slowly for many reasons. Despite the fact that there is well developed banking sector in Volga region, the real sector still lacks the leverage for large investment projects. The banking system in the Volga region has the resources necessary for lending to the real sector of the economy, but the credit institutions have no incentives for investing funds into the economy.

Therefore the coordination of the interests of these sectors is one of the priorities of the Russian economy in the long term. In this regard, during the period until 2018 it is planned the execution of several federal programs whose primary purpose is to create an enabling environment to attract private capital into the real economy.

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