Economic and organizational mechanisms of forming business networks in the construction industry

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Abstract. In recent times, emerging new types of economy have given rise to the changes in people’s attitude and behavior at different levels of their participation in business, which results in the economic effect of each industry in the market [1]. Society confidence depends on food security of the region and satisfactory living conditions, which determines the research of the construction industry development level and the search for the ways to decrease the cost of housing estate objects as the welfare factor of the population [2]. The article features the rating analysis of the country regions according to the volume of housing delivered as well as the leading real estate developers on the Russian territory. The dominant factors of the construction industry development are determined [3]. The model of the construction cluster of the region is suggested. The financial solvency analysis of the companies in the specified region is done on the basis of cluster organization applying Russian and foreign methodology. Moreover, the recommendations on improving the construction industry infrastructure and costs reduction in the industry are proposed.

Introduction
Financial sustainability reduction in the industry of some regions is caused by the lack of investment, slow delivery of new housing and lower budget for these goals implementation. The situation becomes even worse due to the uneven allocation of the construction complexes on the country territory. This raises the need for the joint effort of business, authorities, investors and innovators on certain territories, which will provide competitive advantages for the competition and the efficient use of the resource and production potential. The participants’ alliance of business environment is based on the principles of a network approach that has become widespread in the international economic practice in recent decades. The network approach implements the concept of the cooperation which is based on the number of key features typical for modern business thus increasing competitive advantages. The cluster organization model of construction companies that allows determination of the economic effect for each integrating subject is described in the article. The model represents one of the types of the territorial networks.

Materials and methods
Construction is a substantial industry of material goods production, which promotes increased production, better social and economic situation in the regions and provides about 6-7 % of gross product in Russia. The situation is improving but full recovery has not been achieved yet [4]. It can be explained...
by the efficient industry in the economically developed regions and decreased financial sustainability and output in the hinterlands [5]. Moscow region (5.7 million m$^2$), Leningrad region (2.9 million m$^2$) and Krasnodar region (1.9 million m$^2$) are the leaders in the volumes of housing delivered in the first half of 2018. The leading regions in construction volumes for the period between January and June 2018 are shown in Figure 1.

Table 1 represents the ranking based on the total square of blocks of flats delivered in 2017.

Table 1. Leading real estate developers and contractors in Russia

| N° in ranking | Company name | Main operation regions | Delivered by the end of 2017, [m$^2$] |
|---------------|--------------|------------------------|---------------------------------------|
| 1             | State corporation «PIK» | Moscow, Moscow region, Saint Petersburg | 1,538,422 |
| 2             | Setl Group Holding | Saint Petersburg, Leningrad region, Kaliningrad region | 1,221,129 |
| 3             | Finance and Construction Corporation "Lider" (joint company with "DSK-1") | Moscow, Moscow region | 971,000 |
| 32            | "Neftestroyindustriya - Yug" LTD | Krasnodar region | 161,136 |
| 43            | Special investment contract "Development-Yug" LTD | Krasnodar region, Rostov region | 126,500 |
| 44            | State corporation GK "Flagman" | Krasnodar region | 123,518 |

One of the ways to increase the industry efficiency in the regions is to form business networks on the construction cluster basis, which main goal is to raise competitive advantages [6]. The organizational model can be represented as follows (refer with Figure 2) [7].
Taking into account the general situation in the construction complex in Russia, it can be assumed that in most regions clusters have not been formed yet. However, considering construction volumes and rising complexity of horizontal and vertical relationships, the need to form such business network becomes obvious [8]. For its practical realization one region with conditions and structural elements required for the cluster creation the Krasnodar region was chosen.

To determine the economic effect based on the generally accepted theoretical approaches of the cluster contribution into the regional system the following indicators should be considered:

- $E_k^1$ is the share of innovative organizations functioning for at least 3 years;
- $E_k^2$ is the share of all companies producing construction materials on the basis of vertical relationships;
- $E_k^3$ is the share of construction materials costs in the production cost of construction goods;
- $E_k^4$ is the share of economically active population in the total number of employed population;
- $E_k^5$ is the ratio between the average price of delivered housing in the region and the average value for the country.
- $E_k^6$ is the share of financially sustainable construction companies in the business segment of the region per 1,000 units;
- $E_k^7$ is the labour efficiency in the construction industry.

The economic effect in the industry overall accounting for the confidence coefficient of the population for the contractors and goods manufacturers can be calculated as follows [9]:

$$E_c^c = \sum_{i=1}^c K_i \cdot E_c^c.$$  

where $0 \leq c \leq 1$, $\sum c\cdot = 1$. 

**Figure 2.** Model of the regional construction cluster
Krasnodar developers have reached higher positions in the “TOP Developers of Russia” monthly rating. While many companies in Moscow and some other regions have faced either a low rise or a decrease in the volumes of housing, almost all large developers in Krasnodar have strengthened their positions in the market.

According to experts, it is due to the comparatively advantageous situation and the redistribution of the forces in the construction market in the region: while less successful companies had financial problems and spoiled their reputation with unfinished construction, the leaders started new projects thereby occupying the emerging niche.

According to the data of the Federal State Statistics Service, Krasnodar region delivered 31.14% more blocks of flats in 2017 than in 2010, which makes up 4,728.4 thousand m².

Overall, the conducted research showed that the main problem of the region is the profitability decrease and financial sustainability [10]. It should be mentioned that the analysis of the indicators was based on the methodological approaches shown in Table 2.

**Table 2.** Financial sustainability analysis (debts management ratios, long-term solvency) [11]

| Indicator                      | Methodology                                      | Characteristics                                      |
|-------------------------------|--------------------------------------------------|------------------------------------------------------|
|                               | Domestic experience / Foreign experience         |                                                      |
| Total debt ratio              | Total number of sources of funds / capital resources | Total liabilities / Total assets                      |
|                               | Characterizes the level of assets financing through liabilities |
| Debt-equity ratio (financial leverage, financial risk ratio) | Raised funds / capital resources                  | Total debt / capital resources                       |
|                               | Characterizes the degree on the company dependence on external factors |
| Long-term debt ratio          | Long-term liabilities / long-term liabilities + capital resources | Long-term liabilities / long-term liabilities + capital resources |
|                               | Shows the share of raised funds in the permanent capital of the company |

There are two alternative ways to increase goods profitability such as larger sales volume and more efficient marketing (i.e. higher profit at the same sales volume). Sales volume can be increased either through market expansion or through deeper market penetration.

Return on equity (financial profitability) characterizes the profitability level of capital funds. During the analyzed period, this parameter is mostly positive for large companies, which means their high investment potential as it is much higher than for other ways of investment. However, for small companies this parameter is negative.

To support unprofitable construction companies their investment potential should be raised. The scheme shown in Figure 3 is suggested as a simplified scheme of a construction company investment proposal including measures aimed at increasing investment potential [12].
Figure 3. The scheme of coordinated measures aimed at higher investment potential of construction companies in the contractor work market

Having improved investment characteristics of the project a construction company gains additional competitive advantages in the contractor work market within the investment and construction complex in the region, which is directly connected with reaching the main goal of investment activities i.e. maximized efficiency of the investment and construction complex of the region.

The results of the modelling are recorded in financial statements, tables and graphs. This information as well as the explanatory text are included into the business-plan prepared by Project Expert. Processing and scanning of the data prepared by the program are carried out in the “Results” section. Total assets of companies in the cluster are 5,587,000 thousand rub. at the beginning of the project realization including total capital funds of 5,475,000 thousand rub. After repayment of long- and short-term loans total capital funds decrease to 110,000 thousand rub. by the 4th month of the project realization and become negative during the next 4 months. Then, after the companies achieve full capacity in contractor works and repay their loans, this parameter starts growing and by the end of the 1st year of project realization increases by 1,565,753 thousand rub. By the end of 2019, total capital funds will increase to 35,631,753 thousand rub.

Summary
The result of the research is the justification of business networks formation and development mechanisms in the investment and construction complex taking into account a variety of all their elements. The proposed tools make it possible to create different types of business networks which
provide the most effective cooperation of the network participants.

Among the main policies are:

1. Optimization or costs reduction. The idea is to prevent profit decrease and optimize costs. One of the ways to regulate costs is the control system, which will reduce costs through their more thorough monitoring.

2. Reorganization of inventory stock. It means allocating reserves according to their importance and more stable performance.

3. Debt restructuring. It will result in higher liquidity that is achieved through a complex analysis of the debt and the possibility to reduce it. Otherwise, debt can be restructured through changing long-term liabilities into short-term ones and vice versa.

4. Prioritization of the payments to debt holders to reduce cash outflow. It means ranking creditors according to their importance. Crucial creditors must be paid particular attention to; it is advisable to enhance communication with them to strengthen mutual understanding and the desire for cooperation.

5. Reassess capital investment plans, which will lead to increased cash inflow.

6. Additional income from the use of capital funds by other cluster participants. Leasing or sale of property to the participants of the services market will result in more cash inflow. Unleased property should be temporarily shut down and registered in the tax authorities as temporarily shut down that will exclude this property from the taxation.

Factors and ways of increasing labour efficiency are quite simple. Neglecting these methods leads to lower profit and valuable workers. Choosing the ways of increasing labour efficiency, the company chief executive should take into consideration the peculiar features of the company business.

As the result of the implementation of the methods and algorithms suggested, the best cooperative measures of the business-plan (both local and network) can be selected and the expected economic effect can be determined.

References

[1] Abdrazakov F K, Pomorova A V, Tkachev A A, Sirota V T 2016 Analysis and estimation of expenditure of investment projects for the agricultural using natural resources (J. Agrarian scientific magazine) 2 37–40.

[2] Abdrazakov F K, Povarov A V 2009 Energy-savings it is a basic factor of development of housing communal economy (J. Real estate: economy, management) 3–4 8–10.

[3] Abdrazakov F K, Povarov A V, Sirota V T 2015 Modern state and further market of not height building of area of Saratov development. Modern technologies are in building, providing with a heat and providing energy (Proceedings of international scientific practical conference. FSBEI HE "Saratov SAU") 17–22.

[4] Takhumova O V, Lovyannikova V V, Konovalova I A 2016 Innovative mechanism for increasing the efficiency of regional agroindustrial sector (J. Actual problems of economics) 002010 (184) 228–233.

[5] Abdrazakov F K, Tkachev A A, Pomorova A V 2014 Perfection of organization of investment economic process (J. Mechanization of building) 9 (843) 15–18.

[6] Filatov V V, Zaitseva N A, Larionova A A, Zhenzhebir V N, Polozhentseva I V, Takhumova O V 2018 State Management of Plastic Production Based on the Implementation of UN Decisions on Environmental Protection (J. Ekology) 27 (106) 635–642.

[7] Takhumova O V, Kadyrov M A 2018 Capital Structure Optimization in Russian Companies: Problems and Solutions (J. Journal of Applied Economic Sciences) XIII 7 (61) 1939–1945.

[8] Askerov P F, Cvetkov I A 2015 Analysis and diagnostics of financial economic activity of organization 176.

[9] Akulich V V 2014 Analysis of labour resources (J. Reference book of economist) 6 54–58.

[10] Vasileva N K, Saprunova E A 2018 Analysis of the financial reporting (Krasnodar, FSBEI HE Kuban SAU).
[11] Uralova D.ZH., Comparison of foreign and Russian experience of lead through of financial analysis and management risks, J. Young scientist. 7 (2016) 1012–1017.
[12] Alekseeva A.I., Comprehensive economic analysis of economic activity, KnoRus, Moscow, 2012.