Technological innovations in the proactive modernization strategy of a construction company (by the example of Tandem group of companies)

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Abstract. Significant positions of the construction industry in the economy of Russia and its regions, as well as a large number of people employed in the industry cause a great deal of attention to the modernization processes of construction companies. The article discusses the application of a proactive approach to the companies development in the construction industry. Using the example of the Tandem group of companies, the possibility and focus of a proactive modernization strategy for a company in the construction sector (with an emphasis on the innovations use, in particular, in the ceramic bricks production using new raw materials in the burning mechanism) is being considered, such strategy effectiveness in terms of economic results and strengthening its position in the markets of building materials is proved.

Introduction
Today Russian construction industry occupies significant positions in shaping the economic dynamics of the country and regions, including by creating the material base for the development of other industrial sectors and improving the life quality of the population. At the same time, 6.3 million people are employed in Russian construction, which is 8.8% of those employed in the country economy as a whole. In addition, construction accounts for 6.3% of gross value added in the country economy, and this figure increased (in 2005, the share of construction in the Russian GRP was 5.7%). In a number of regions, the construction role in the economy is noticeably higher: for example, in the Rostov region, one of the five most populated regions of the Russian Federation, the share of construction in GRP reaches 7.2%. In total, there were approximately 112.8 thousand construction companies in 2005 and approximately 279.5 thousand - in 2017. In the Rostov region, the number of such organizations is 6.2 thousand.

It is significant that the construction sector acts as a locomotive for the growth of the Russian economy even in a down economy: thus, the work volume in the construction sector by 2015 reached 7.5 trillion rubles in Russia, showing continuous growth since 2010.

Such significant potential of the construction sector makes it one of the potential drivers of economic modernization. Additionally, the bases for such construction role are its technological complexity, communication with a large number of related enterprises and organizations, communication with
universities and research organizations in the construction industry, and the established practice of introducing innovations.

At the same time, the high market competitiveness and the need to find market niches force companies to follow strategies that can ensure the preservation of market positions and the markets expansion. The article in this regard set the goal of analyzing the proactivity features as a general methodological approach to organizing activities, and identifying its use potential as a modernization strategy for the construction company activities.

Given this goal, the article addressed such research tasks as analyzing the “proactivity” features as an approach to the activity arrangement, and as business strategies at the company level, promote the possible applications of such approach in the construction companies activities, as well as developing insights regarding the proactive approach role for the company development prospects in the construction industry in modern market conditions.

Research methods
Achieving the study objectives assumed reliance on theoretical approaches that have emerged today in management and ascending, in turn, to ideas about the human activity nature in a market economy. In particular, the article relies on well-established scientific approaches to interpreting the “proactivity” which as the basis of competitive strategies means the result orientation, proactive identification and use of opportunities, preventive action against potential threats, as opposed to reactive behavior, which is connected with already encountered problems [1]. According to S. K. Parker [2], to be proactive means to act proactively, to predict and prevent problems, to expand opportunities through independent efforts. The proactivity ideas are associated with the work of V. Frankl [3], as well as S. Covey [4].

The study relies on the structuring of behavioral and entrepreneurial strategies based on the proactivity-reactivity dichotomy, according to the approach of G. Allport [5]. Research approaches rely also on vertical structuring and consideration of cross-cutting nature (invariance) of proactivity, taking into account the fact that personal qualities are reflected in the strategies of firms behavior in the market, as well as in the management of large systems (in particular, at the macro level proactivity is attributed to the economic and foreign policy of the states [6], and at the level of spatial systems can be considered as an instrument for the implementation of territorial policy [7]). It is taken into account that proactivity as an approach is used when engaging in innovative processes of business [8], in the field of risk management, analysis of entrepreneurial orientation of business. A number of authors analyze proactivity as a tool not only for development [9] but also for achieving organizational flexibility [10] and competitiveness [11, 12].

Research results
Active market-adapted strategy development of construction companies in a highly competitive environment (in terms of a significant number of sector companies) entails using a proactive strategy as a promising approach, which as an entrepreneurship property, is identified primarily at the level of personal attitudes that produce a system of ideas and actions in the framework of the dichotomy of proactivity-reactivity. Distinctive manifestations of proactivity are self-determination represented by an independent construction of a system of goals and methods for achieving them. Such goal-setting relies on the internal control locus, personal priorities and attitudes, and is generally independent of the environment. Proactive personality tends to take responsibility, to predict and plan activities in the external environment.

According to J. Bonnet [13], such traits of an entrepreneur as a risk-taking tendency, a desire to be a leader in innovation, providing breakthroughs in economic growth and development, in turn, act as a factor in the companies proactivity, assuming no expectation of a favorable situation, planned activities to achieve set goals, risk acceptance and environmental uncertainty. When deployed outside, proactive activity results in the active management of the external environment and its transformation, the expansion of control and participation areas. Instead, reactive strategies are formed depending on the environment, are distinguished by the lack of initiative, the activity patterns use.
Proactivity is common, though not dominant business strategy: only approximately 1/3 of companies are proactive. However, such strategy becomes vital in a highly competitive industry, the priority of such competition vectors as service time, customization, and digitalization.

As a result of its efficiency, a proactive approach is used in the marketing system of companies, however, large companies in the construction industry can also use: proactive production management, which implies constant leading improvement (in production, design, service delivery), proactiveness in cost management (achieving cost effectiveness), proactive interaction with the external environment (monitoring, trends prediction, staging). Risk management is also applied through proactive monitoring to search for patterns and relationships of events, risk prediction. There are three areas where proactive analysis can ensure progress: production time, design, cost reduction [14].

Proactivity is associated with aggressiveness against competitors, and in this capacity it acts as one of the indicators for measuring entrepreneurship (along with such indicators as the creation of new businesses, innovation and self-renewal [11]).

The property of building independent (determined by the vision and goals of the company itself) strategies manifests itself in the characteristic proactive behavior during a crisis. A typical market reaction in a crisis is a reduction in marketing budgets, investments (including in R & D), personnel, and a product line. Instead, in the case of proactive behavior, the key reaction to the crisis is: rethinking the marketing strategy, aggressive personnel recruitment, developing CRM, sharing marketing resources within the company, integrating sales and marketing functions, increasing efficiency and finding new knowledge and experience, strengthening the team and applying new marketing techniques such as crowdsourcing [12].

As an example of introducing such an aspect of proactivity as innovation, we can consider the local regional construction market, where (taking into account the localization of the materials production in the region itself due to the low products transportability), competition is as great as possible. As a good illustration of a segment of this kind, the ceramic bricks production can be called.

In Russia in 2013-2017 ceramic bricks production was significantly reduced. Thus, the decline in finished product output for the period under review was 23.5%, and in real terms, production declined from 7.23 billion standard bricks to 5.53 billion standard bricks, which was due to a decrease in the purchasing power of the population in crisis [15]. According to the BusinesStat estimates, the gradual restoration of the ceramic brick sale in Russia began from 2018; peak sales are expected in 2022, when it will be approximately 6 billion standard bricks [16].

Features of the ceramic bricks production, at the same time, in the prospective market growth conditions, limit the competition potential of companies relying on traditional technologies, which actualizes the need to search for proactive development approaches, the most obvious of which is the reliance on innovation.

Today, manufacturers of building bricks are often numerous and concentrated in a small area due to their attachment to sources of raw materials and a short range of product transportation. Thus, in the Rostov region, producers concentrate near the dumps of mines (heaps), dumps of concentrating factories, clay-containing reservoirs. An example of manufacturers in this area in the Rostov region is the Tandem group of companies. The company was founded in 2010 and today is specialized in:

- production of building materials (hydro and heat insulating, wall, materials for rough and fair finishing, electrics, plumbing, reinforced concrete, landscaping);
- production of materials for road construction (geotextiles, membranes, grids);
- production and sale of fire-fighting equipment (fire cabinets assembled, fire extinguishers, shields, hydrants, personal protective equipment);
- implementation of security systems (low-voltage systems, computer equipment, video surveillance).

The results of the financial activities of the Tandem Group for 2013-2017 are given in the Table 1, and reflect the instability of the construction market as a whole, which resulted in particular in the instability of revenue from sales of products.

**Table 1.** Financial results of the Tandem group of companies for the period from 2012 to 2017
| Description                                      | 2013 year | 2015 year | 2017 year |
|-------------------------------------------------|-----------|-----------|-----------|
| Gross profit/loss on sales, mln. RUB            | 204.6     | 154.8     | 163.8     |
| Earnings, mln. RUB                              | 425.7     | 374.7     | 226.0     |
| Profit/breakage loss on sales over fiscal year, mln. RUB | 8.9       | 12.6      | -0.957    |

At the same time, Tandem group of companies has formed a modernization strategy based on a proactive approach, which develops as the advanced technologies development that can optimize and improve the economic performance of activities, taking into account environmental conditions.

The latter was possible in particular, with the introduction into practice the development of the Don State Technical University, which provided the technological advantages of the ceramic bricks manufacture.

Thus, traditionally the ceramic bricks manufacture is carried out through two main technologies: plastic method and the method of dry (semi-dry) pressing. Production of ordinary ceramic bricks and face bricks is practically no different. The main difference lies only in the requirements for these products set forth in production standards (GOST). The method of plastic molding involves the possibility of manufacturing both solid and hollow products.

The change in the production technology of ceramic bricks proposed by the scientists of Don State Technical University [17, 18] was that it was proposed to use technogenic raw materials of the coal series as the main raw material, and clay as an additive, in a proportion of not more than 30%. Offered for use in such technology for the production of ceramics technogenic raw materials of the coal series (cake, sludge, screenings) are medium-grained materials with a particle size from 2 to 6 mm (they are represented by aleurolites and argillites) little demand, uniform in composition and, one can say half prepared for production. Moreover, this raw material contains up to 15% of coal components. When burning bricks from such raw materials, it is necessary to provide a temperature of 700 °C, while additional heating in 300 °C gives the raw material itself.

The new technology is able to demonstrate an example of not only improving production efficiency, but also proactivity.

Therefore, speaking of the actual economic effects, we note that this effect from this technology use consists in saving the cost of fuel (gas) for firing ceramic products. Therefore, for example, the cost of fine coal is 4,000–5,000 rubles per ton, thermal coal — 3,000–4,000 rubles, gas — 8,000–1,000 rubles per ton, and technogenic coal raw material — 100–200 rubles per ton. Consequently, this raw material is efficient in use for enterprises and this is because the fuel (gas) savings for burning ceramic products from it will be 30–45%. According to the preliminary calculations, the conditional bricks cost based on the proposed technology will be 2.5–3.0 rubles. In addition, when using finely dispersed debris processing products, there are additional sources of income by reducing the cost of maintaining the dumps and using the excess heat during firing.

Therefore, with this technology, the products cost becomes minimal due to: excluding the cost of raw materials associated with the development and maintenance of deposits; the practical absence of the mass preparation cost; products drying due to heat removal from the furnace.

Describing the proactive component provided by the technology introduction, we note that this technology is the basis of the advanced search and replacement strategy for depleting raw materials. Therefore, Tandem group, like most Russian producers, uses high-quality clay for brick production, but in modern conditions, it is becoming less and less, and the extraction of such clay is expensive. One of the main problems of the ceramic industry in Russia as a whole, and the Rostov region, in particular, is the lack of high-quality clay raw materials, in connection with which the new technology allows to maintain and expand its position in the markets.
In addition, the technology economic effects can be considered as a proactive strategy for maintaining profitability in the context of the expected increase in the energy cost, which is significant for energy-intensive brick production.

Finally, the technology lays such an element of the company market strategy as an opportunity, due to more attractive product prices, an active, proactive search for new consumers who can be offered products on terms that are more attractive. The same can be considered as a condition of crisis sustainability in the future, as well as a sustainability factor in a competitive regional environment.

Summary
Formulating the company strategy in competitive markets, which today are the markets in the construction industry in the regions of Russia, involves the use of innovative approaches. This approach, relatively infrequently used in business, is proactivity. Formed as a combination of many elements, proactivity includes, among other things, the active use of innovations that preventively strengthen the companies position in the face of restrictions on raw materials, energy, other resources, or in a crisis and a contraction of consumer demand. In essence, innovation and interaction with the innovation infrastructure can be named as a proactivity method, since the key advantage of proactive companies is the search for opportunities and new ways of creating value in the market. Identifying the customers hidden needs, their satisfaction degree with the company products, customer training, their involvement in designing and creating products can be tools for this. The role of consumer involvement in the development process and the search for innovations is highly appreciated [8]. Analysis of other proactivity forms of a construction company strategy (in particular, technological innovations) that can form sustainability taking into account the complexity of the business environment and changes in consumer demand is perspective at the same time.

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