

Actual Problems of Management Quality Control of a Construction Company

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Abstract. Modern market economy imposes fundamentally different requirements for the quality of construction. Currently, the stable position of the construction company in the contracting market is determined by the level of competitiveness. In turn, competitiveness in construction is associated with three indicators - duration, cost and quality of construction. And the quality gradually comes to the first place. The concept of the national policy of Russia in the field of quality of products and services quite rightly emphasizes that the main task of the domestic economy in the XXI century is to increase competitiveness due to the growth of quality. The authors used the developed technology for practical use, and the article presents the results this application. The proposed mechanism for strategic planning of the construction company provides an opportunity to systematically approach the issues of finding ways to achieve the well-being of the company in the short and long term.

1. Introduction

The effectiveness of the construction organization of different profiles is determined based on the performance, which has a long-term and short-term perspective. Management of modern construction and investment complexes involves solving the actual problem of increasing efficiency and reducing costs. A significant part of the measures taken in this respect was developed back in the 1960s. However, now there is an objective need to improve these measures, bring introduced quality management to the modern building realities radically changed in half a century of the world.

Experience in the practice of quality management of the organizational and management activities of a construction organization makes it possible to scientifically generalize the basic principles of improving management processes. They include the following main points:

- 1) Rational and objective formulation of the purpose of the main activity;
- 2) Analysis of existing practices
- 3) Development of improvements and determination of their effectiveness
- 4) Acceptance of proposals
- 5) Their implementation [1].

2. Materials and methods

In this quite workable scheme, there are many nuances in practice leading to virtualization of quality control processes and separation of the management system from reality and production practice.



Let us dwell in more detail on each of these elements of the methodology[2-5]. Formulation of the goal. The logic of any business requires first of all a clarification of its purpose, purpose. It should be noted that the choice or definition of the purpose of the management process is a complex issue. Often, the management apparatus, especially associated with quality control and work efficiency, understands the purpose of the enterprise quite abstractly. The lack of necessary practical skills and competencies replaced by skills from other areas - jurisprudence, office work, social philosophy - leads to a distorted perception of the actual course of business in the company, the goal setting and the possibility of achieving the goals. It is currently unacceptable to say that ineffective quality control and management of management processes, leading to a distorted view of the essence of the firm's work, directly causes damage to the company of a different nature[6,7]. There was a general idea that the goal of any modernization is the same - increasing the efficiency of production. However, this is not enough. If, for example, to issue a directive: to improve the efficiency of managing the process of introducing new products, this will mean determining only the general direction of efforts. In order to proceed with a concrete modernization of this management process, it is also necessary to set concrete goals that are tied to the production cycle. Specific goals may be, for example, speeding up the processing of documentation, reducing its volume, eliminating duplicate documented processes and procedures, etc. In practice, the quality management departments reduce the improvement of the management of the organization to a role-playing game, where the involved units take functional and psychological roles, and the process is reduced to demonstrating virtual changes expressed in purely ritual actions: changing the design of documents, titles, divisions and posts, the introduction of new templates of appeals and the commission of other acts unrelated to the actual improvement of the management of the company. Substitution of role-playing activity leads to the creation of an illusion of effective managerial process, when the document circulation undergoes external changes, but in practice the management is paralyzed, boiling down to ritualizing processes and substituting an objective performing functional with the sacralization of the formal process. The company incurs losses because its affairs are actually neglected, and the management apparatus is engaged in the production of documents deprived of an objective sense, reducing the rational activity to the infinite multiplication of the same forms, and dealing with the direct functional of management on the residual principle[8-11]. For the same reason, communication between departments is broken and the ability to solve operational problems operatively. When delays arise at the construction site due to the inability to resolve the issue due to the discrepancy between the forms of the request and the changed nomenclature, this indicates the emergence of a quality control crisis at a self-sustaining stage [14].

3. Results and discussions

The danger of bureaucratization of management processes lies in the fact that the management apparatus loses a realistic view of the functioning of the company and cannot objectively determine the cause of losses and delays. Creation of a virtual world in which the company exists in the form of a constantly self-reproducing documented process hinders the determination of a realistic picture of the functioning of the enterprise, an objective control over the expenditure of funds, deadlines and measures for implementing projects, etc. The executive apparatus, which is also in two realities, is not able to eliminate the discrepancy between the objective and virtual reality on its own, because the laws of preserving reality, which are expressed in controlling and providing a formal illusion of reporting and correcting processes, hinder this. Any statement about the discrepancy between reality and virtuality on the part of the executive may be regarded as a recognition of one's own incompetence or deliberate harm, neglected performance of duties. Therefore, realizing the harmfulness of illusion, the staff most often continues to support it. As a result, the production crisis is so deep that the company bears irreparable losses and can cease to exist[12-15].

The external audit factor, of course, can help to establish the true state of affairs in the company, but only if a professional builder conducts external audit, a person who has a production and management experience of real work. In practice, the conduct of an audit by specialists of a firm specializing in such activities, but not having specialists in the organization's profile, reduces to the

same illusion of verification as the internal quality control. Establishing the quality of production on the fact of the presence or absence of a process matrix or the conformity of the title of administrative documents to the established form does not mean establishing the presence or absence of quality of production, negligence and abuse of personnel. Numerous discrepancies in work schedules, fictitious performance sheets, inconsistencies in calendar planning, discrepancies in the dates of obtaining administrative documents and executive documentation - many factors remain beyond the attention of auditors focused on formal compliance with the requirements of the standard and not versed in the intricacies of real construction. As a result, any corrective actions based on the results of such an audit will not have the expected effect[16,17].

The first task in formulating the goal is, therefore, setting it up in a general way, and then concretization, which develops in two ways. First, the goal should express the clear direction of the subsequent actions on a certain object of modernization and, secondly, the degree of detail of tasks that will be solved by the introduction of relevant proposals. It can happen that the task will be solved only by improving adjacent or previous operations. Such a case means that the choice of purpose is incorrect, that it is necessary to expand it or remove it altogether.

It is impossible, of course, to compile a comprehensive list of conditions or frameworks for formulating the goals of modernizing management processes, but highlighting several of the most important principles is necessary. One could suggest the following basic principles that the formulation or definition of a goal should satisfy:

- 1) the goal must necessarily relate to the improvement of a particular management process at the given enterprise (in production, in material and technical supply, marketing, etc.)
- 2) the goal should be real, knowledgeable experts and appropriate technical means should be available. The achievement of the goal should be at least approximately limited by the term;
- 3) when formulating the goal, it should provide for the achievement of certain concrete and measurable results of activities
- 4) the ability to monitor the progress of the task
- 5) possession of sufficient rights and competence to make possible proposals to achieve the goal

The formulated goal must be compared with these five conditions. This will be the second task in determining the goal. There may be several such approximations to the most specific goal, but each subsequent more detailed and concrete goal does not bring about fundamental changes in the content of the originally set common goal[18].

The third and final task in formulating the goal is to formalize the task of rationalization. Currently, there are several forms of these documents: a plan, a program, a specific task, etc. Such a document is the starting point in documenting all activities.

It is important to understand that the competence approach should objectify the choice of the goal of modernization and development of enterprise management[19,20]

To achieve objectification of the decisions made, a modern automated management system based on self-taught programs is available. One of such programs is the system of modeling social-management processes «KlinnerX». Its primary algorithm is formed by a professional specialist whose task is to optimize and systematize the main processes into the proposed system. A model of an ideal management system is created, whose main indicators will serve as a benchmark against which the indicators will be compared. After the introduction of the system into the production process, the program, under the direct control of the company's management, periodically checks the electronic document flow, reporting, key performance indicators and the execution of decisions, signaling the presence of deviations and possible unnecessary increase in processes or their reduction.

Of course, the program is not able to "think" instead of the company's management and develop corrective measures instead of quality control departments. It only helps to avoid distortion of reality, preserving the history of processes and allowing to visually tracking the way of development of the company, discovering the points of removal from the standard.

With the help of self-taught systems it is possible to expand the software functionality that will allow processing large data sets and develop optimization models, modernizing and correcting

measures, preventing virtualization of the production process. With the help of the system of mathematical modeling, the software solves the problem of continuity of the tasks being solved, their connection with the previous event. Experience shows that the most effective results of modernization of management processes are made if the new goal logically follows from the work already done or is aimed at frontal expansion of the main activity.

For example, in the company LLC SK "YuzhTekh Stroy" the object of modernization was chosen - the construction of a high-rise building in the city of Sochi and defined the goals of optimizing production, which experienced significant difficulties in meeting the schedule of work and expenditure of fixed assets.

An analysis of the existing practice using software modeling and correlation with the ideal model of the development of a building object was carried out in a complex manner and showed that each separate process of management activity had no finite effectiveness, being duplicated and multiplying in the process of implementation. As a result, actual control over the implementation of decisions was not carried out, boiling down to declarative «acts of eliminating inconsistencies» in an ideal situation. Meanwhile, the production process left to itself was actually destroyed, and the company incurred losses comparable to the result of a natural disaster. At the same time, an external audit conducted by unprofessional specialists, although it found a discrepancy in the financial statements, could not adequately reveal the depth of the problem and outline ways of its elimination.

One of the methods of primary analysis carried out in the company was to provide a brief, sequential description, the collection of data directly at the production site, reconciling them with documents of a current nature, the product of calculations using generalized methods. Duplication of documents, although difficult to verify problem areas, but could not prevent the creation of a picture of objective and virtualized reality, as well as points of discrepancy between the real and documented state of affairs in the company.

The systematic nature of the analysis, built on the conformity of the technological and design processes with the planned ones, made it possible to identify the moments when control of control was focused on external markers, and the actual control was reduced to suboptimal short-term measures of an episodic nature.

The software allowed the use of graphical analysis methods with real-time modeling of processes.

With the help of network graphics, a general picture of the divergence of the research processes of managerial activity was constructed. Next dokumentogrammy were drawn up, showing the cyclization and self-sustaining process of multiplying the control and administrative documentation to formalize the external design to the detriment of the actual content of the documents. Thus, due to the duplication of reporting forms to monitor the expenditure of construction materials on the subject had been lost because data is duplicated many times in the documents, the logical necessity of which has not been proven an objective reality.

Operograms have shown that the main activity of the administrative and executive apparatus is reduced to the duplication of operational actions, only a part of which was related to the control and management of production processes. The main working time was spent on the creation of new documents having the same essential nature.

4. Conclusions

Thus, the solution of the issue of management effectiveness and quality control of production is possible only if it is professional control. Management at all stages of the production cycle should be carried out according to the principle of "five documents" - only five documents relating directly to production activities can be processed promptly by one contractor in a compressed calendar period and only five documents can be checked at the same time. Therefore, the calendaring of the flow of documents must be built not formally, but taking into account the realistic picture of the management of the company, the schedule for the movement of the administrative documentation must be strictly controlled, and the documents themselves should not be multiplied unnecessarily. Help in solving this problem can be the application of modern automated control and information processing systems,

which in turn should be managed by qualified specialists not only in the field of organization and management, but also in the construction industry.

References

- [1] Gaybarian O E, Myasishchev G I 2017 The practical application of client-oriented technologies of linguistic communication *Engineering journal of don* vol 47 **4(47)** p 193
- [2] Shirina E, Gaybarian O, Myasischev G 2017 Effective management of construction company in terms of linguistic communication *IOP Conf. Series: Earth and Environmental Science* 90 012077
- [3] Bloch M Y 2004 Pragmatism, Ethics and Aesthetics of Communication *Linguistics and language education in modern Russia* (Moscow) pp 43-67
- [4] Zilberova I Y 2013 Analysis of the scientific bases of organizational and process design and modern methods and pricing models of organizational and technological solutions *Scientific Review* **9** pp 582-585
- [5] Klyuchnikova O V, Kostyuchenko V V, Pobegaylova E V 2014 Organization management from psychological components to its structuring (Rostov-Don)
- [6] Klyuchnikova O V 2013 The effectiveness of the project excavate for laying utility networks *Inženernyj vestnik Dona* **4** URL:<http://www.ivdon.ru/ru/magazine/archive/n4y2013/2072>
- [7] Encyclopedia of the Don region The jubilee album devoted 70 years the Rostov region (Rostov-Don)
- [8] Keeling R P 2007 Horizontal and Vertical structures: The dynamics of organization in higher education (Liberal Education) 22-31
- [9] Masse P 1962 Optimal investment decisions (Englewood Cliffs N.J.)
- [10] Oleynik P P 2001 Organization of construction, Conceptual framework, models and methods, information and engineering systems *Profizdat* (Moscow)
- [11] Pobegaylov O A, Voronin A A 2013 The key component of the human resource management system *Inženernyj vestnik Dona* **3** <http://www.ivdon.ru/ru/magazine/archive/n3y2013/1778>
- [12] Tsipes G L 2009 Projects and project management in a modern company: Scholastic allowance *ZAO Olympus-Business* (Moscow)
- [13] Kostyuchenko V V 1998 Organization, planning and management in construction: textbooks (Rostov-Don)
- [14] Mazur I I, Shapiro V D, Karolinska I M 2001 Management of projects *High School* (Moscow)
- [15] Pobegaylov O A 2012 Calculation of the number of frames of the building organization *Inženernyj vestnik Dona* **3** URL:<http://www.ivdon.ru/ru/magazine/archive/n3y2012/962>
- [16] Näslund B 1966 Simultaneous determination of optimal repair polisay and service life *Swed J. Econ.*
- [17] Kostyuchenko V V 1999 New information technologies in construction: the textbook *RSSU* (Rostov n / D)
- [18] Klyuchnikova O V, Kadilin S S 2013 The use of elements of the theory of graphs in the allocation of power resources to the type of linearly extended objects *Inženernyj vestnik Dona* **2** <http://ivdon.ru/magazine/archive/n2y2013/1666>
- [19] Mirin E V 1987 Cities and districts of Rostov region, Historical and local lore essays (Rostov-Don)
- [20] Frangopol D M, Lin K Y, Estes A C 1997 Reliability of reinforced concrete girders under corrosion attack *Journal of Structural Engineering ASCE* 123 pp 286-297

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