

**METHODOLOGY FOR DETERMINING THE EFFICIENCY OF A
CONSTRUCTION ORGANIZATION**

Jumaev Dilshod Qurbonmuratovich

Institute for Advanced Training and Statistical Research,

independent researcher

E-mail: www.dilshod.576@mail.ru

ANNOTATION. This article reviews the scientific literature on the formation of performance indicators of construction organizations. Differentiated and generalized indicators of efficiency are used to assess and determine the economic efficiency of construction production. The effectiveness of the use of some form of cost and resources is expressed in differentiated performance indicators: quantitative indicators, final indicators and social results. Scientific and practical suggestions for solving problems in the construction complex were developed.

Key words: statistical analysis, fixed assets, capacity of fixed assets, capital construction, contract method, economic method, duration of construction objects, capital investments, unfinished construction objects, economic efficiency, socio-economic efficiency, investment, comparative analysis of regions; construction industry, housing, affordable housing, spending, capital investment and fixed capital investment, new construction, reconstruction, technical re-equipment, etc.

INTRODUCTION

Among the sectors of the national economy of the Republic of Uzbekistan, the construction sector plays an important role not only as a sector that creates the main funds of the economy, but also in implementing the structural changes taking place in the country's economy and urgent tasks in the social sphere with various characteristics (demographic structure and its variability, high level of rural population and low provision of housing and socio-cultural-household facilities,

insufficient development of internal infrastructure, transport and communication facilities, etc.).

Therefore, differentiated and generalizing indicators of efficiency are used to assess and determine the economic efficiency of construction production. The efficiency of using one or another type of cost and resources is expressed in differentiated indicators of efficiency: volume indicators, which are initial indicators, include natural and value indicators of the volume of products produced and services provided: the volume of output expressed in natural form, commodity products; The final indicators are often the volume of product sales and the net income of the enterprise, measured in natural terms and in the form of income (revenue) from the sale of products; social results are reflected in indicators such as an increase in the standard of living (increase in wages, the level of medical care, housing), free time and the efficiency of its use, working conditions (reduction in injuries, employee dissatisfaction), the state of the environment and the impact of production on the environmental situation.

The classification of costs and resources is different in world experience, the following main forms of them are distinguished[2]: living labor costs (time worked, payroll, number of industrial and production employees); material costs (raw materials, supplies, fuel and energy consumption); production funds or, according to the economic definition, capital (fixed and working capital) or, according to the financial definition, enterprise assets; natural resources (land, mineral reserves); information resources (results of scientific knowledge, scientific research, inventions and rationalization proposals).

The time factor is of great importance in assessing the economic efficiency of production[3]. From this point of view, all costs and resources are divided into: current costs (production and operating costs); one-time costs (investment, capital funds).

Current production costs are incurred during the year, characterize the costs of production and product sales and include the costs of raw materials, materials,

fuel, energy, wages, depreciation of fixed assets (means), that is, the amount of living labor and means of production consumed during the year.

One-time costs are financial and material and technical means (investments) that are necessary for the expanded reproduction of fixed assets, technical improvement of production, and are advanced for many years. Unlike current expenses, which usually pay off over the course of a year, one-time expenses pay off over a specific period of time, often more than a year, after production facilities and facilities are put into operation, new products are developed, and research and development is implemented.

LITERATURE ANALYSIS ON THE TOPIC

The construction industry unites the activities of general and special construction, design, research and development organizations, construction industry enterprises included in construction associations, as well as all organizations performing construction and installation works (CIM).

According to Sh.A. Isamukhamedova, the capital construction sector also includes the activities of customers who own capital investments based on their own funds, debt and state budget funds[4].

Practically all types of transport are used to transport construction materials, structures and equipment (road, rail, river, sea and air transport). The cost of transport costs in the structure of construction costs reaches 20 percent[5].

The construction process is divided into three main stages: 1) preparatory work for construction; 2) the construction process itself; 3) commissioning of the finished construction object.

The following three stages of the circular flow of capital investments correspond to the construction production process: 1) production - as a product form of the creation of fixed assets; 2) implementation (realization) - as a form of the transformation of construction products into fixed assets; 3) preparation of the next period (cycle) of repeated production in order to convert funds into future products[6].

Simultaneous costs include the costs of construction organizations to create or purchase fixed assets and the cost of material reserves in the working capital of unfinished construction. Current costs are all direct and indirect costs of a construction enterprise associated with the creation of objects: wages, building materials, depreciation and other costs[7].

The general characteristics of construction are as follows[9]: Construction production and the final product are unstable and temporary in nature, and they are not of the same type; The technological interdependence of all operations included in the construction process.

Construction is a materially demanding industry. As noted above, more than 70 national economic sectors supply building materials to this industry to obtain the final construction product[8].

A distinctive feature of the construction industry is, first of all, its connection with the concentration of production. Concentration is understood as the process of concentrating funds, objects and labor resources at one point in large production units[9].

RESEARCH METHODOLOGY

In conducting the research, the methods of logical thinking, reasoning, observation, comparison, descriptive statistics, selection, generalization, grouping, determination of dynamic changes, analysis of statistical data, induction and deduction, classification, statistical evaluation, algorithmization, programming, comparison and expert assessment were widely used. Also, scientific research by foreign and local scientists on the essence of investment efficiency in the construction industry and methods for its assessment was deeply studied, and author's approaches were developed in this regard.

ANALYSIS AND RESULTS

It is possible to compare various results of the enterprise's activities with various costs and thereby determine the efficiency of production.

Here we would also like to emphasize that when talking about the economic efficiency of production, there are also broader interpretations of it as socio-economic efficiency. This is explained by the fact that in addition to the economic results considered above in the quantitative and final sense, there are also social results. Based on this, efficiency is also understood as a socio-economic category[10].

Production efficiency is determined, firstly, to determine the level of utilization of individual forms of costs and resources, the effectiveness (productivity) of production as a whole; secondly, to justify and select the most economical, optimal from alternative options for solving a production and economic problem. Depending on these tasks (issues), absolute and comparative efficiency are distinguished[11].

Absolute efficiency is calculated for a certain period of time for an enterprise and characterizes the total value of economic efficiency compared to the amount of costs received separately and in the aggregate.

Comparative efficiency is calculated on the basis of comparing technical and economic indicators for two or more options for solving an economic problem and is used to select the best option and determine its socio-economic advantage over other alternative options.

Differentiated (differentiated) and generalizing indicators are used to calculate absolute efficiency. Differentiated indicators characterize the efficiency of using each of the individual forms of costs and resources separately. Table 1 presents the main differentiated indicators of production efficiency, which shows that they are calculated as the ratio of product production to individual forms of costs and resources.

Table 1**Proposed differentiated indicators of production efficiency***

Indicator name	Formula for calculation
Material efficiency of the	Material costs/Production

product	
Material efficiency of the product	Production/Material costs
Labor efficiency of the product	Time spent on production/Production
Labor productivity	Product release/ Time spent on product release
Fund efficiency of the product	Fixed assets + working capital/Production
Fund productivity	Production/ Fixed assets + working capital
Energy efficiency of the product	Energy costs/Production
Energy efficiency	Production/Energy consumption
Scientific efficiency of the product	Research and development costs/Production costs
Science productivity	Production/Research costs

*Author's development

The lower the material capacity, labor intensity, fund capacity, etc. of materials, and the higher the material return, labor productivity, fund return, etc., the higher the efficiency of resource use and production. In general, general indicators are used to assess the efficiency of construction (production). Profit (net profit) is often involved as the final result. For this reason, product profitability and production (capital) profitability are among the traditional general indicators. In addition to the above indicators, indicators introduced from foreign practice are also used to assess production efficiency.

According to the purpose of the analysis, they can be grouped as follows:

- 1) liquidity (quick cash conversion) indicators;
- 2) financial stability indicators;
- 3) business activity indicators;
- 4) profitability indicators.

Liquidity indicators characterize the ability of an enterprise to pay, fulfill its short-term obligations, and manage working capital[12]. When analyzing the

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indicators presented in Table 2, it should be borne in mind that an enterprise is considered solvency if the amount of current assets (reserves, cash, debts, etc.) is greater than or equal to its external debt[11].

Table 2

Liquidity Indicators

Indicator name	Formula for calculation
Current liquidity ratio	Current assets/Current liabilities
Quick liquidity ratio	Liquid assets/Short-term liabilities
Absolute liquidity ratio	Cash + Short-term financial assets/ Short-term liabilities

In world practice, the following theoretically justified values of liquidity indicators are used: the required value of the current liquidity ratio, which shows what part of current liabilities on loans and settlements can be canceled (suspended) with the mobilization of all working capital, should not be less than 1. Its optimal value should be within 2.0-2.5. The value of the quick liquidity ratio is considered optimal if it is at the level of 0.7-0.8. The sufficient value accepted in world practice for the absolute liquidity ratio is 0.20-0.25.

The role of analyzing the financial condition of an enterprise, reflecting its financial stability, is very large. With the help of the financial stability indicators presented in Table 3, the level of risk that may be associated with the means of forming the structure of borrowed and own funds used to finance the assets of the firm is determined. The indicators in the table are grouped in such a way that they characterize the ratio of own and borrowed funds; the state of working capital and the state of fixed assets, that is, the state of fixed assets and intangible assets.

Table 3

Indicators of the financial stability of the enterprise [13]

Indicator name	Formula for calculation
The ratio of own and borrowed funds	

Autonomy coefficient	Equity/ Assets
Financial dependency ratio	Liabilities/ Assets
Debt ratio	Liabilities/Equity
The ratio of own and borrowed funds characterizing working capital	
Current assets coverage ratio	Own working capital/Current assets
Equity capital maneuverability ratio	Own working capital/ Own capital

The business activity of an enterprise, as well as the assessment of resource utilization, can be determined using a number of indicators presented in Table 4[11].

Table 4

Business activity of an enterprise

Indicator name	Formula for calculation
Asset turnover ratio	Revenue from product sales/Average annual value of assets
Equity turnover ratio	Revenue from product sales/Average annual cost of equity
Current asset turnover ratio	Revenue from product sales/Average annual value of current assets

The financial condition of the enterprise, its stability, largely depends on the optimal structure of capital resources (the ratio of own funds and borrowed funds) and the structure of the enterprise's assets, primarily the ratio of fixed and working capital, as well as the full adjustment of the enterprise's assets and liabilities[13]. Table 5 presents the formulas for calculating financial stability.

Thus, financial stability is expressed in a number of coefficients that comprehensively assess the balance sheet structure: the ratio of borrowed and own funds, the share of own working capital, the share of own funds in capital, the share of property constituting the enterprise's production potential in the total value of assets, etc. The purpose of such a set of indicators is to assess the degree of

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independence of the enterprise not only from market conditions, but also from contingencies associated with ordinary breaches of contracts and defaults[13].

In the current conditions, when significant changes are taking place in various forms of ownership, management methods, and economic relations in our country, the successful development of a construction enterprise directly depends on the level of efficiency of its activities, and in accordance with the requirements of the new economic reality, a construction enterprise must

Table 5**Financial stability account of the enterprise ***

		Recommended value
1. Independence ratio (equity concentration)	Equity/Balance sheet currency	0,5-0,6
2. Coefficient of dependence	Raised capital/ Balance currency	0,4-0,5
3. Financing ratio	Equity/ Raised capital	>1
4. Debt to equity ratio	Debt capital/Equity capital	<1
5. Investment coverage ratio (financial stability ratio)	Equity + long-term liabilities/balance sheet currency	Equity + long-term liabilities / balance sheet currency Within the norm ≈ 0.9 , in critical cases -0.75
6. Capital expenditure (tax) ratio	Equity/Book value of fixed assets	

7. Long-term debt ratio	Long-term liabilities/Equity+Long-term liabilities	
11. Current debt ratio	Current liabilities/capital raised	
12. Accounts Payable Ratio	Accounts Payable + Other Liabilities/Earned Capital	

*Author's development

The method of assessing the economic efficiency of the activity should also change.

In this regard, the ability of managers to correctly assess the current situation in real time and, at the same time, act in accordance with a pre-selected clear and effective strategy for the development of the enterprise is of particular importance. However, it is impossible to evaluate and compare various development strategies without developing an appropriate system of indicators that would allow for a deep and realistic description of the activities of a construction enterprise.

Efficiency in the economy of an enterprise, in its most general form, means the effectiveness of economic activities, the ratio between the results achieved and the amount of living and materialized labor. The level of efficiency is determined by comparing two values (quantities) - economic effect (result) and the expenditure (cost) of resources to achieve this result.

The interrelation of the results of the activities of a construction organization with the stages of the cycle of creation and sale of construction products (works, services) represents the principle of assessing the effectiveness of management of the activities of a construction organization. Profit is not generated during the marketing and monitoring of construction markets, as well as during design and planning and preparatory work, it is generated only at the sales stage.

At the stage of sales of construction products (works, services), profit takes precedence in the system of evaluation indicators. Profit (income), being an indicator of gradual changes in the life cycle of a construction product, reflects the very essence of this stage - the stabilization of profit growth, a decrease in its cost, having determined the recognition of the product by the consumer. However, by the end of the stage, when the first signs of an absolute decrease in profit become noticeable, the task of updating a number of products and developing new types of products (works, services) becomes urgent. At this stage, the importance of strategic tasks such as searching for new ideas, developing them, testing them, sending them to the construction market, etc. increases, and assessing efficiency again involves using indicators of the stability of the construction organization in the market. At the final stage of the life cycle of a construction product, as a rule, a rapid exit from the market of obsolete products and the abandonment of active market activities is carried out.

Thus, it can be noted that the resulting indicators of the entrepreneurial activity of a construction organization are variable depending on the stage of the life cycle of the construction product (works, services), as well as the possibility of combining them.

Construction organizations use various methods to measure entrepreneurial activity indicators. To assess the competitiveness of a construction product, a methodological (methodological) approach is used, based on obtaining generalizing indicators that combine a number of specific characteristics, taking into account their weight and importance. In this case, a well-known algorithm is used:

1. Specific indicators characterizing the competitiveness of the construction product (organization) are determined.
2. The values of specific indicators (in natural units of measurement, if necessary - in points) are determined for each alternative option - K_i .

3. Using the expert method, a sequence of specific indicators of competitiveness is compiled in order of importance for the consumer.

4. A “benchmark” option is selected as the basis for comparing specific indicators (any alternative option can be selected as a benchmark).

5. Specific indicators of competitiveness are compared with the benchmark option and the index of specific indicators (J) is determined for each option:

$$J = \frac{K_i}{K_{ie}} \quad 1.1$$

where K_{ie} is the private competitiveness indicator corresponding to the “standard”.

6. Using the engineering forecasting method, the reliability coefficient of the private competitiveness indicator – K_i is determined. That is:

$$K_i = \frac{i}{2^{i-1}} \quad 1.2$$

where i is the ordinal number of the sequence ordered by the level of importance.

7. The overall (integral) indicator of the competitiveness of the product (organization) represents the calculation of Y_{ku} from each of the compared options:

$$Y_{ku} = \frac{\sum_{i=1}^{i=n} k_i J}{\sum_{i=1}^{i=n} k_i} \quad 1.3.$$

where n is the number of private competitive indicators being evaluated.

This indicator is generally suitable for a comparative assessment of the effectiveness of an organization's business activities, but at the same time it cannot be used as an absolute characteristic.

Using the profit indicator as the resulting characteristic, it is possible to apply a widely known functional model based on a standard model.

$$MaxE_t = (P_t Q_t - \sum_{j=1}^{j=n} f_j x_j - FC - R_t B_t)(1 - T) \quad 1.4$$

where E_t is the income of the construction organization after deducting taxes and interest payments; P_t is the price per unit of construction product; Q_t is the number of units of construction product sold; Price per unit of production factor j ;

Total number of production factors j used in the production process; n is the number of production factors; FC is the payments recorded by the construction organization; R_t is the average interest rate paid on its own debts; B_t is the total number of debts received by the construction organization (the value of non-own (non-private) funds); T is the corporate tax rate.

To characterize the costs that determine the result, it is necessary to pay attention to the principle of complexity and completeness of cost components. In this case, the following summation of costs can be formed (Z):

$$Z = Z_{ob} + Z_{op} + Z_{tr} + Z_m \quad 1.5$$

here Z_{ob} , Z_{op} , Z_{tr} , Z_m – working capital, fixed assets, labor, and marketing costs (as appropriate).

In practice, difficulties may arise when using the mechanism of the ratio of the result and cost indicator. If the result indicator is expressed in values (for example, profit), a simple mechanism for comparing single-quantity values can be used. However, if the result indicator is given in other units of measurement (market share, competitiveness), it cannot be directly compared with the value indicator. In this case, a special mechanism is needed that measures different qualitative and dimensional characteristics[14].

When using the efficiency indicator as a relative quantity intended for scientific substantiation and selection of more important decisions, an index approach can be used, in which the cost and result indicator is expressed in the form of an index that does not have a dimension and allows for a comparison procedure[15].

The indicators presented represent the overall result of entrepreneurial activity. They are combined by many factors and can be called generalizing in nature. In addition to general indicators, it is possible to distinguish methods for determining the economic efficiency of the organization of production and economic activities of enterprises, the organization of production, production, labor and management, innovations (innovations), etc., each of which directly affects the final results and significantly determines the efficiency of the construction organization's

activities[16]. Each type of activity is characterized by its own (specific) results, on the basis of which the corresponding indicators reflecting the efficiency of the implementation of individual types of activities of business sub-systems can be calculated.

CONCLUSIONS AND PROPOSALS

Among the sectors of the national economy of the Republic of Uzbekistan, the construction sector plays an important role and significance not only as a sector that creates the main funds of the economy, but also in implementing the structural changes taking place in the country's economy and urgent tasks in the social sphere with various characteristics. Therefore, at the stage of studying the theoretical aspects of the development process of this sector, we came to the following conclusions and proposals:

The considered indicators for assessing efficiency allow us to solve a number of practically significant tasks:

- selection of optimal strategic goals;
- substantiation of the goals and objectives of entrepreneurial activity;
- forecasting the results of activities;
- analysis of market opportunities of the construction organization and description of its position (position) in the competitive environment;
- implementation of the principles of complementarity of target characteristics, combining effective characteristics;
- use of the principles of strategic flexibility and adaptability of production-construction systems.

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