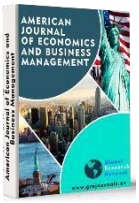

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Article

Improving the Assessment of the Economic Effect of Improving the Quality of Construction Works

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Abstract: The need for improved economic assessment of quality enhancements in construction, especially in regional businesses, is addressed in this study. certain the socioeconomic benefits of effective resource usage in construction, this study fills a gap in the quality management frameworks that are currently in use, which frequently do not include economic impact assessments that are relevant to a certain location. In terms of methodology, the study uses statistical and economic analysis to assess quality costs and how they affect construction production. The findings show that quality improvement initiatives can lower total project costs, boost job creation, and improve the gross regional product. According to the consequences, implementing strict quality management procedures can encourage sustainable development in the building industry and increase regional economic growth.

Keywords: economic system, efficiency, construction works, economic efficiency

1. Introduction

One of the principles of economics is to obtain wealth using limited resources. The main description of this is that, firstly, resources are always limited, and secondly, the current state of needs in society does not have the maximum quantitative size and content, that is, it is conditionally unlimited. This principle requires that every business and economic activity, including the construction sector, put the problem of efficiency in front of it.

The efficiency of construction production is a socio-economic category that represents the ratio of production results (efficiency) and the value of factors (labor, labor tools and objects) spent on it. In this case, efficiency means the useful economic result of the investment and construction activities of organizations in the field, the amount of created material assets that meet the needs of society [1].

Improving the quality of construction work is an important direction of increasing efficiency in this field. Research conducted by scientists shows that the implementation of quality improvement measures leads to a reduction in total construction costs by 2-4%. It is possible to distinguish two groups of results obtained as a result of taking complex measures of quality management during the execution of construction works, that is, results obtained at the regional scale and results obtained at the scale of construction enterprises. At the same time, if we take into account the time of emergence of the economic effect, it is necessary to consider its short-term (within the current period) and

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medium-term (over a certain period of time) types. As a result of the analysis of economic literature, we believe that the results of increasing the efficiency of construction work can be described as follows (Table 1).

Table 1. Economic effect of improving the quality of construction works

	Short term	**Medium term**
At the regional level	An increase in the share of construction in GNI; The result of an increase in the volume of construction work (creation of additional jobs and commissioning of facilities).	Optimization of GNI content; Increasing investment attractiveness of the region; Construction market development; Expansion of the labor market in construction
At the scale of the construction industry enterprise	Lower overall costs; Customer satisfaction; An increase in the rating of the organization;	Quality cost management; Increasing the culture of construction production; Entering the international construction market; Creation of investment-construction clusters;

The impact of construction works on the GNI, the increase in the volume of investment and construction works, the creation of new jobs, and the launch of additional social facilities serve as the source of regional efficiency.

The important thing is that these savings are mainly based on the reduction of adjustments, that is, the increase of added labor, that is, it contributes to the creation of added value created in construction work.

Literature Analysis

Economic system is a complex of all economic processes based on property relations and economic mechanisms formed in the world, state, society and region. In all economic systems, special economic resources are necessary for production, and the results of their activity are distributed, exchanged and consumed [2].

The economic system is a set of economic elements that form a certain integrity and economic structure of society [3].

Economic system is a redistribution of economic resources that benefits economic entities in a certain area[4].

According to the American scientists P.Samuelson and U.Nordhaus, economic efficiency is a constant comparison of benefits and costs, to obtain the maximum possible wealth from available resources, provided that anyone makes rational actions. Producers and consumers of resources seek to achieve the highest efficiency by maximizing benefits and minimizing costs [5].

According to our definition, the efficiency of the economic system means the ratio of the results of the system activity to the amount of resources spent on this goal.

2. Materials and Methods

In order to clarify the economic efficiency of construction works, the content of economic systems, the types of efficiency in them, assessment criteria and methods should be studied in the research. As it turns out, quality management is primarily an economic issue, which affects not only construction enterprises, but also at the regional level. Economic analysis, quality costs, and statistical analysis methods were used to classify and quantify them by types of fruits.

3. Results and Discussion

Special methods and mechanisms for improving the quality of construction work have been developed in the conducted researches, in which the scientific foundations of further development of quality management systems have taken an important place. In this regard, the first direction of the economic effect obtained as a result of increasing the quality and efficiency of construction works is a positive change in the gross regional product. To calculate this effect, we take as an example the composition of the gross regional product of Samarkand region at the end of 2023 (Table 2). It shows the change in the composition of GNI as a result of the 1% increase in the added value created in the construction sector.

Table 2. Effect of increasing construction works by 1% on the structure of GNI in Samarkand region [6]

No	Indicators	Current composition of 2023		The case of an increase in the volume of construction work by 1%	
	total billion soum GNI, including	74 115,3	100	74 157,6	100
1	Net taxes on products	1 389,2	1,87	1 389,2	1,87
2	Agriculture, forestry and fisheries	28786,2	38,84	28 786,2	38.82
3	Industry	11 184,8	15,09	11 184,8	15,08
4	Construction	4 235,0	5,71	4277,4	5,77
5	Services	28 520,1	38,48	28 520,1	38,46

Information from the Samaraqand Department of the Statistical Agency under the President of the Republic of Uzbekistan. www.samstat.uz

Calculations show that as a result of improving the quality of construction works, the volume of GDP will increase by 42,35 billion soums. Assuming no change in other sectors, the share of construction works in GNP will increase from 5,71 percent to 5,77 percent.

The second result at the regional level is related to the creation of new jobs as a result of the increase in the volume of construction works and the commissioning of additional facilities within the framework of the investment program. We will consider this in the example of Samarkand region. The volume of construction works completed in 2023 amounted to 11763,4 billion soums. If the volume of work increases by 1% using these resources as a result of quality improvement, the volume of construction works will reach 11881,0 billion soums, that is, additional work worth 117.6 billion soums will be completed. According to the data of the Republic of Uzbekistan, the annual labor productivity of one

employee is 99,495 mln. equal to soums (130767,1 /1314,3), this number is equal to the creation of 1182 jobs.

Additional construction works will bring socio-economic benefits through the commissioning of residential and other social facilities.

The implementation of systematic measures to improve the quality in construction will create a number of promising results. This effect is primarily the result of an increased focus on quality in teams, and it tends to increase over time. For example, in the near future, we consider it appropriate to take into account the optimization of the structure of the GNP, the increase of the investment attractiveness of the region, the development of the construction market mechanism and the expansion of the construction labor market.

The second source of the implementation of quality improvement mechanisms in construction organizations is the economic benefit received by organizations.

The economic efficiency of construction organizations is the effective use of the organization's assets, which is determined by the ratio of income and expenses related to the construction of objects, that is, to cover the cost of the resources spent and obtain sufficient profit for sustainable development.

In general, increasing economic efficiency means increasing the result obtained from a unit of resources. In this case, the ways of increasing economic efficiency can be included: obtaining a high result without changing the consumption of resources, reducing the consumption of resources to achieve the current result, achieving a high result while reducing the consumption of resources.

The direct effects of the implementation of quality improvement activities are manifested in the following:

- A decrease in the costs of construction facilities. In this case, the economic effect is created due to the saving of the correct expenses and the targeted use of other expenses. Direct cost savings come from not spending materials on correcting defects and avoiding unnecessary labor costs. For example, the estimated price is 10 billion. Let's say that in the construction of an object equal to soum, the product cost is 94%, direct costs are 82% of the cost, and other costs are 18%. As a result of quality improvement, if direct costs are increased by 1%, the economic effect will be equal to 77,08 million soums (10000*0,94*0,82*0,01).
- Satisfaction of the customer, that is, acceptance of the completed object without defects. On the one hand, this effect will be related to the savings of additional costs related to the working committee and the admission committee, along with the rewards corresponding to the "excellent" grade. Today, it is also possible to use the guarantee costs of 5% of the estimate price.
- The third direct effect of quality improvement is related to the improvement of the rating of the construction organization. Achieving a rating of "SSS" and above guarantees a competitive advantage in the construction market and creates new opportunities in tenders. Therefore, the rating increase will be achieved by the construction facility operating at full production capacity throughout the year.

Since economic efficiency covers all aspects of enterprises, its indicators are also different. Indicators representing economic efficiency in the construction organization can be combined into the following groups:

The ratio of results to costs (R/C), or indicators of return on resources. These are indicators of results per unit of resources: material return, fund return, capital return, labor productivity, etc.;

The ratio of costs to results (C/R), or output capacity indicators. These can include indicators representing the amount of resources per unit of output: material capacity, capital capacity, average labor costs, etc.;

The result and cost difference (R - C, or, C - R), or indicators of the final economic result. These indicate the absolute amount of economic activity efficiency, for example, the amount of profit (loss);

Relative economic efficiency indicators (R - C / comparison base), or profitability indicators. These include return on costs, return on working capital, return on construction, return on capital, etc., according to the basis of comparison.

In the experience of foreign countries, the "Key Performance Indicator" special indicator system is used to evaluate the efficiency of construction projects. In Uzbek, this can be translated as "key performance indicators". In construction, KPI is determined by absolute and comparative methods. They analyze and evaluate the activity of the construction organization with exact numbers in the absolute method. The comparison method is aimed at determining changes in the organization's activity over a certain period. Regardless of the method used, the purpose of KPI is to comprehensively evaluate the efficiency in construction [7]. (Figure 1)

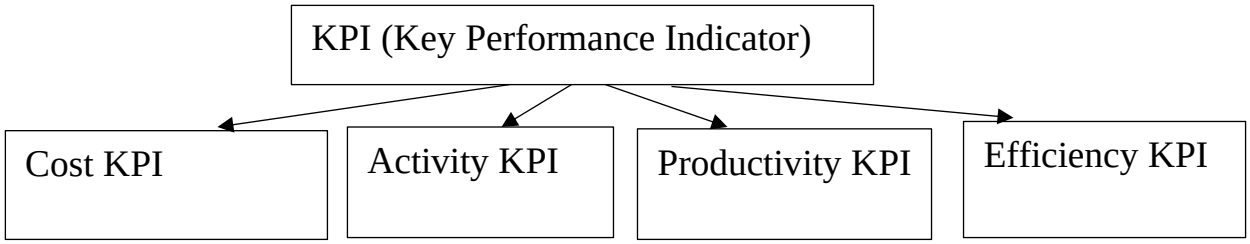

Figure 1. Proposals for the composition of the KPI system in construction works

Cost indicators are mainly indicators that reflect the volume and dynamics of resources spent in the organization, that is, indicators for managing the consumption of materials, equipment, labor, tangible and intangible assets, and others. Cost management serves to assess the operational system of the construction organization's competitiveness.

Activity KPI mainly includes indicators that analyze the performance of construction processes, that is, management of the performance of construction works at the scale of objects and departments, calendar schedules and monthly plans. This system of indicators is part of operational management of construction production.

Performance KPI require the use of a benchmarking method and are devoted to evaluating the ratio of the results obtained to the costs incurred. Usually they reflect the productivity of resources, especially labor resources.

Efficiency KPI includes indicators reflecting financial and economic efficiency. In the current evaluation system, they are called profitability indicators.

If we compare the above two indicator systems, we can see that their content and goals are close to each other. Considering the positive aspects of these systems, we propose the following assessment system for quality management in construction (Figure 2).

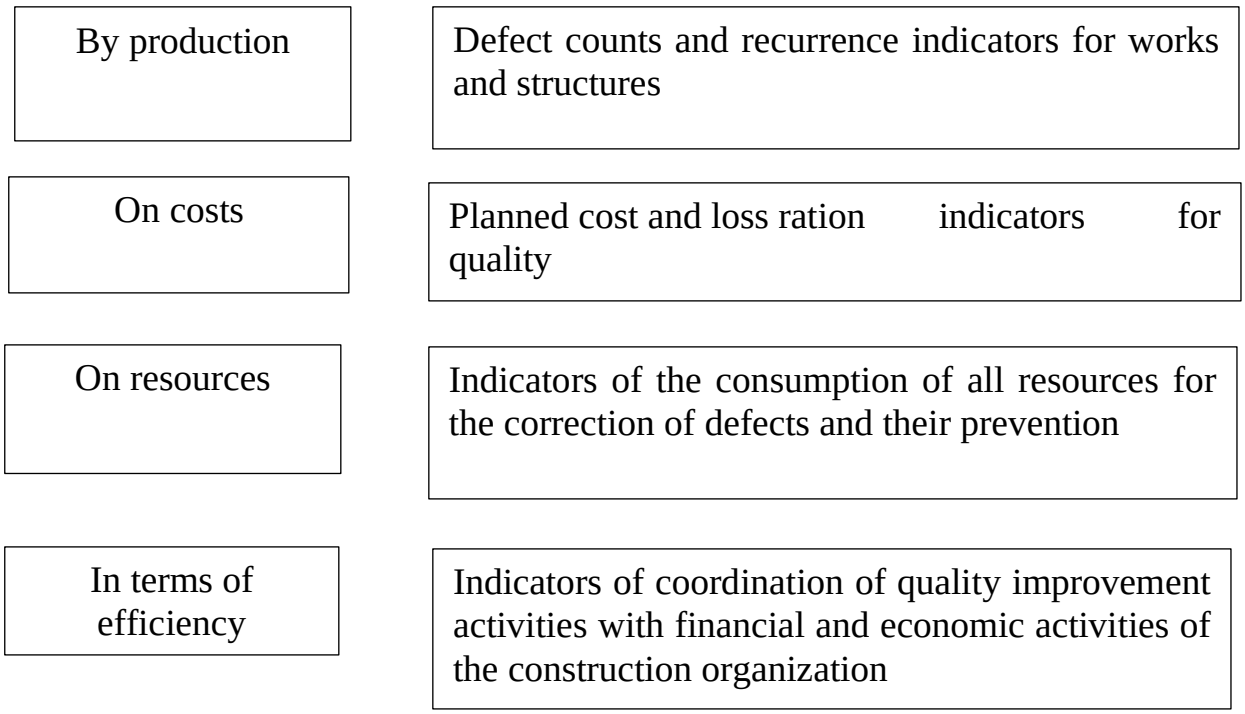

Figure 2. System of performance indicators for quality improvement in construction organizations

Harmonization of information sources on the quality of construction production is required in the mentioned system.

By combining and digitizing these information sources, conditions are created for the calculation of quality performance indicators and continuous monitoring of construction objects.

4. Conclusion

It is proposed to include the following in the prospective indicators of economic efficiency related to quality improvement at the scale of construction enterprises:

Quality cost management. The essence of this effect is directly related to the above-mentioned sources of information, that is, the creation of a monitoring system allows to directly manage the quality level in organizations, that is, a system is formed for predetermining quality indicators, taking measures to achieve and coordinate them, and monitoring efficiency;

Increasing the culture of construction production. The essence of this effect comes from the increased attention of each employee to the quality, that is, the employees who are indifferent to the quality are almost absent, and continuous improvement becomes part of the organizational culture;

Entering to the international construction market. The introduction of the quality improvement system allows to achieve ISO 9001:2015, ISO 14001:2015, and ISO 45001:2015 international certificates, which is a way to enter not only national but also foreign markets;

Creation of investment-construction clusters. One of the important effects of quality improvement is related to the unification of the participants of the investment-construction process, that is, the transformation into a cluster system. In the cluster system, the

efficiency of the whole process is increased due to the efforts of the participants towards a common goal.

At the same time, we emphasize that it is expedient to gradually harmonize the national assessment system with the internationally recognized assessment system in order to achieve international competitiveness. The proposed performance evaluation system serves to objectively evaluate the performance of the construction complex, including the results of quality and efficiency management.

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