The Concept of“Quality Construction Products”

The Concept of "Quality Construction Products"

N N Aleksandrova[1], T V Bezhentseva[1]

[1]Tyumen industrial University, Tyumen, Volodarsky's, 38, Russia

E-mail: nata_aleksandr@mail.ru

Abstract. The task of this article is to determine the scope of the term “quality” regarding the construction products. For this purpose we provide the analysis of evolutionary development of the concept “quality”. The article deals with the content and elements of construction products. Building on results of scientific research and existing regulatory documents, the authors interpreted the concept of “quality”, requesting to consider it as an integrated category. The term characterizes the effectiveness of organization as an object of the assessment. Disclosing the concept of “quality of construction products” the authors took into account the productive, operational and consumer characteristics.

1. Introduction

The quality of manufactured construction products is lately regarded as a crucial condition for its competitiveness in the market and, as a consequence, survival in the market conditions, the introduction of scientific and technological achievements and the increase in the efficiency of the enterprise in the construction industry. It should be noted that in the general sense the concept of quality is applicable to many different objects of the functioning of a construction enterprise, from construction products to individual business processes.

The review of the literature showed that the concept of the term "quality" is legislatively fixed, but, in our opinion, it does not fully take into account the peculiarity of production, operational and consumer characteristics of construction products as one of the objects of the construction enterprise activity.

In this regard, the authors were tasked with interpreting the concept of the object of functioning of a construction enterprise, as set forth in GOST ISO 9000-2015, and revealing the essence of the concept "quality of construction products".

2. The research part

The essence of the concept of "quality" has evolved with the development of social needs and the expansion of production capacity to meet them.

The philosophical category of quality was first analyzed by Aristotle in the III century BC and was treated as a distinction between objects, differentiation on the basis of "good - bad."[19]

Georg Wilhelm Friedrich Hegel, XIX century AD, characterized quality as first and foremost identical with being certainty, so that something ceases to be what it is when it loses its quality, in other words, quality characterizes the difference of an object from all the others.[10]

Friedrich Engels considered quality in two ways: firstly, every quality has infinitely many quantitative boundaries accessible to measurement and observation, and, secondly, there are "... not qualities, but only things that have quality, and at the same time infinitely many qualities.[13]

In accordance with the foregoing, it should be noted that all aspects of quality are viable, but the economic aspect of quality is recognized as crucial, since the study of other aspects is of practical importance if it is implemented on an economic basis, that is, confirmed by economic expediency.

Currently, according to the national standard ISO 9000-2015, the quality of products and services of the organization is defined as the ability to satisfy consumers and have intentional or unintentional influence on relevant stakeholders. At the same time, the quality of products and services includes not only performance of functions in accordance with the purpose and their characteristics, but also perceived value and benefit for the consumer. [2]

Similar definitions are given in the dictionary of terms of the European Organization for Quality and other sources. The generalized characteristic and historical evolution of the concept of "quality" are presented in Table 1.[1,2,10,11,13,15,19]

Table 1. The historical evolution of the concept of "quality".

Author	The wording of the definitions of quality
Aristotle (III century BC)	The difference between objects, differentiation on the basis of "good - bad."
Hegel (XIX century AD)	Quality is first and foremost an identity identical with being, so something ceases to be what it is when it loses its quality.
Chinese version	The hieroglyph that denotes quality consists of two elements: "equilibrium" + "money", therefore, quality is identical with the notion of high-class, expensive.
Shewhart (1931)	Quality has two aspects: objective physical characteristics and the subjective side - how good a thing is.
Ishikawa (1950)	Quality that really satisfies consumers.
Explanatory dictionary of Ozhegov	1. A set of essential properties, features that distinguish an object or phenomenon from others and give it certainty 2. This or that property, a sign that determines the dignity of something
Juran J. (1974)	Suitability for use. Quality is the degree of customer satisfaction. To realize the quality, the manufacturer must know the requirements of the consumer and make his products so that they meet these requirements.
GOST 15467-79	A set of properties of products that determine its suitability to meet certain needs in accordance with its purpose.
ISO 2001-2015	Ability to satisfy consumers and have intentional or unintended influence on relevant stakeholders .....

Analyzing these definitions, we can distinguish three key words: value, satisfaction, need, on the basis of which it is very important to consider the quality of products from an economic standpoint and interpret it to construction products.

n order to define the term quality in relation to construction products, it is also necessary to analyze this concept. Initially, let's consider the national standard ISO 9000-2015, it presents the following definition: a product is an output (result of a process) of an enterprise that can be produced without any interaction between the enterprise and the consumer. [2]

The terminology focused on building products is noted in the following documents, Table 2.[3,4,5]

Table 2. Interpretation of the terms "construction products".

Document	Construction Products
SNiP 12-01-2004	completed construction of buildings and other construction structures, as well as their complexes
STO NOSTROY 2.35.122-2013	buildings and structures, other results of construction activities, works and serv The wording of the definitions of quality ices of a building nature
The methodology for determining the cost of products on the basis of an estimate-normative base of 2001 on the territory of the Moscow Region	The cumulative result of the activity of the enterprises of the construction complex presented in tangible form and intended for use as fixed assets

Thus, the result of the activities of construction enterprises are construction sites (see Fig. 1).[9] Based on public experience and modern concept in the field of quality, quality should be considered as a complex concept characterizing the effectiveness of all aspects of the organization that creates the object of evaluation. In this case, quality as a generalized category can be represented in the form of a pyramid reflecting the features of construction products (see Fig. 2).

Quality (the top of the pyramid) is a universal (comprehensive, total) quality management that assumes the high quality of all activities, from quality policy to human resource management, in order to achieve the appropriate product quality.

The quality of the activity of a construction organization implies ensuring a high organizational and technical level of construction production, quality control at all stages of the life cycle of construction products, the required working conditions, joint quality work with stakeholders, and so on.

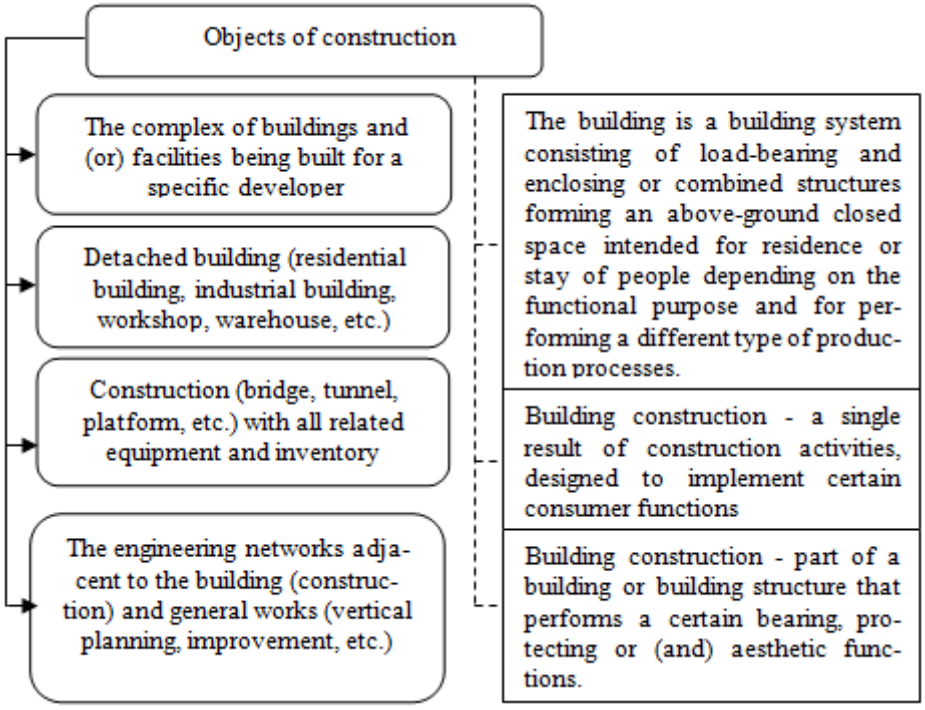

Figure 1. Basic terms related to construction products.

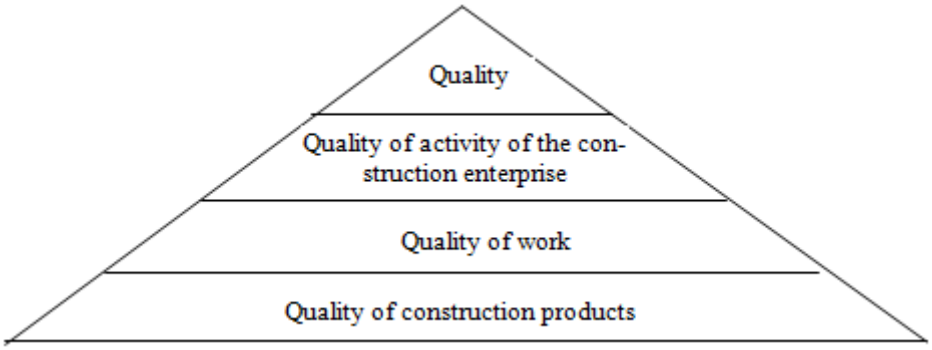

Figure 2. Quality Pyramid.

The quality of work lies in the validity of the management decisions made, the planning system. Of particular importance is the quality of work directly related to the production of construction products, for example, quality control of technological processes, timely identification of defects, training in quality assurance methods, staff development, etc.

The foundation of the pyramid is the quality of construction products, as a component and result of the quality of work. [16]

The quality of construction products from the economic point of view should take into account not only the objective quality characteristics, but also certain subjective characteristics. Subjectivity is primarily due to the fact that construction products are associated primarily with the concept of social needs and is considered as the ability of an object to meet these requirements, while the following features should be taken into account:

- Not all objective existing properties of the object are considered, but only significant for its user;
- The category of utility is assumed in the practical application of the corresponding object, i.e. you can speak about quality only if the object is practically used for its intended purpose.

It should be taken into account, the quality of construction products reflecting the set of useful properties of the object is the result of a complex of processes and depends on various factors: the results of design documentation, the quality of materials and structures, the observance of construction technology, the qualifications of performers, both workers and engineering employees.

It is also necessary to take into account that the quality of any construction products is formed at all stages of the construction processes:

- Project;
- Production (construction and installation work);
- Operational.

In this regard, the quality of construction products depends on all participants in the construction process, starting from state, inspection bodies, design and construction organizations and ending with customers and end-users.[6]

Based on the foregoing, we can assume that the quality of construction products is formed from characteristics from the position of the producer and the consumer (see Fig. 3).

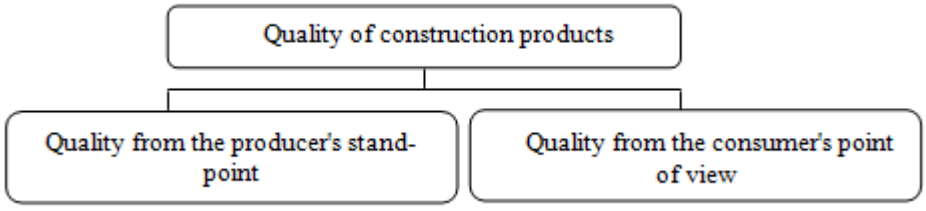

Figure 3. Quality of construction products.

Quality characteristics from the position of the producer of the construction products of the destination are formed by its compliance with the established standards, norms and rules.

Characteristics of quality from the position of the consumer of construction products reflect the level of similarity of the final construction product with the desires of consumers and are based on the resalt of planning.

3. Conclusion

Summarizing all of the above stated, it follows that the quality of construction products, as an economic category, should take into account a set of basic useful properties and characteristics that ensure satisfaction of certain public and personal needs of users when using construction products for their purposes.

4. References

[1] GOST 15467-79"Product quality control. Basic concept. Terms and definitions" (CC. to effect by the Resolution of Gosstandart of the USSR from 26.01.1979 N 244) [Electronic resource] Mode of access: http://base.consultant.ru/
[2] GOST R ISO 9000-2015 "The national standard of the Russian Federation Quality management system Basic provisions and vocabulary" (UTV. By the order of Rosstandart of 28.09.2015 N1390-St) [Electronic resource] - access Mode: http://base.consultant.ru/
[3] SP 48.13330.2011 "of SNiP 12-01-2004 Organization of construction" (UTV. order of the Ministry of regional development of the Russian Federation of December 27, 2010 № 781) [Electronic resource] Mode of access: http://base.consultant.ru/
[4] STO NOSTROY 2.35.122-2013 "Requirements and guidelines for use in construction companies" (UTV.Decision of the Council Of the national Association of builders, minutes of November 15, 2013 № 48) [Electronic resource] Mode of access: http://base.consultant.ru/
[5] 2004 The technique of determination of cost of construction production on estimate and normative base of 2001 in the territory of the Moscow region [Text] / GU MO "Mosoblgosekspertiza" (Moscow) 59 p
[6] Alexandrova N H 2017 Indicators for assessing the quality of residential construction products *Competitiveness in the global world: Economics, science, technology* **3** part 2 pp 9-11
[7] Almuhametova E R 2017 As a priority factor of competitiveness of construction products *Kazan science* **12** pp 13-15
[8] Bryachihin A M 1989 Control of quality of construction M.*: stroiizdat* 230 p
[9] Buzyrev V V 2009 Quality Management in construction: ucheb.benefit SPb.: *GEORGE* 224 p
[10] Hegel G W F 1999 Science of logic: collection of scientific papers Moscow : *Mysl'*
[11] Ishikawa 1988 The Japanese quality management methods: Abbr. per. with YAP. Moscow: *Economics* 215 p
[12] Karpenko E M 2007 Quality Management: textbook for students of specialty "Management" Minsk: *Ministry of Finance ITC* 208 p
[13] Krupp G 1964 Marx and Engels About the connection of education with productive labour and Polytechnic education Moscow: *Enlightenment* 259 p
[14] Kudyakov A I 2008 Quality of construction products - how do we understand it *Building materials* **8** pp 91-92
[15] Ozhegov S I 2014 Dictionary of Russian language: about 100,000 words, terms and phraseological expressions Moscow: *Peace and Education* 735 p
[16] Tebekin A V 2012 quality Management Moscow: *Yurayt Publishing House* 223 p
[17] Freidina E V 2015 Quality Management: studies. Handbook Moscow: *Publishing House "Omega-L*" 189 p
[18] Khasanov M H 2015 The problem of improving the quality of construction products: the initial position and the concept *Problems of formation of common space of economic and social devel-*

opment of the countries of the CIS (CIS-2015) Tyumen, Publisher: Tyumen industrial University pp 558-567
[19] Chikisheva N M 2015 Quality management: textbook Tyumen: *RIO FGBOU VPO "Tyumsaeu"*240 p
[20] Chikisheva N M 2003 The formation mechanism of quality management of construction enterprises SPb.: *Izd-vo Spbguef* 165 p