

## **Quality of Repair Services**

Mitko Nikolov

**Abstract:** *The article clarifies what content is included in the concept of quality of repaired machines and repair services and what is the essence of this concept. The main reasons for ensuring a high level of quality are relevant and important for modern repair production and repair services offered. The importance of the connection between business, management, machine repair processes, quality and reliability of repaired machines and offered repair services is presented. The principles that reflect the diversity in the understanding of the concept of quality of the repair service, as well as its perception are indicated.*

**Keywords:** *quality, repair, service.*

### **INTRODUCTION**

In today's conditions of growing competition on a global scale, quality issues are among the most actual and important issues of any company and activity. Improving the quality of products and services is one of the main directions in the development of technical progress and successful implementation of products and services [1, 2]. Achieving high quality products and services is not only an economic and technical issue, but it also has a social aspect.

Quality is an important factor in raising living standards, economic, social and environmental safety. It is a complex concept that characterizes the efficiency of all aspects of repair production. The problem of ensuring a high level of quality of products and services is and remains relevant. It is a strategic problem, the solution of which depends on the economic stability of each country [3, 4, 5].

The purpose of the article is to clarify the concept of quality of repair services.

### **STUDY OUTLINE**

The repaired machine is a product of the repair production and must have a certain level of quality. The repair of machines is a type of service, because its implementation does not create a new product. In other words, there is no new machine, but only the repaired machine with a fully restored resource. In this sense, services are defined as intangibly dominated products, the result of the application of certain efforts to people and objects. At the beginning of the twenty-first century, services occupied an increasing place worldwide, where 80% of the workforce was employed in this field. Bulgaria is not an exception; services also increase their share in the gross domestic product and become a major source of income for the population [5, 6, 7, 9, 10].

The growth of the market of repair services and the competition require an effort in the direction of improving their quality. The oversaturated market creates more and more demanding and demanding customers. They are looking for reliable repaired machines and services that will meet not only their requirements, but also ideas. The high quality of the offered repair services makes the company more competitive, resistant to crises and increases its market share.

The main reasons why ensuring a high level of quality is relevant and important for modern repair production and repair services are:

Quality is a key element for the purchase of the repaired machine or service from the consumer's point of view. You are more likely to lose orders due to a low level of quality than from excessively high prices;

The quality is comprehensive. Companies carry out many different activities to compete. Quality management systems offer a set of actions covering all phases of the production process (marketing, planning, personnel, innovation, technology, etc.) to stay on the market;

Quality is the main tool for reducing costs. It is always cheaper to repair the machine

the first time than to fix it afterwards;

Quality strengthens the company's position in the market. In a market economy, the level of quality of repair products and services is decisive in competition;

Quality is important not only for repair production, but also in marketing, development, service, etc.

It should be noted that the concept of service quality is multifaceted. It includes the quality of the organization, economic calculations, the technological process of machine repair, environmental parameters, socio-psychological relations, ethical norms, legal, political relations and more. Each component contributes to the level of quality of the services provided [1 - 4]. According to experts, the quality of the repair service depends on the capabilities of the company itself and is associated primarily with the idea of it.

There is diversity in the understanding of the concept of quality of the repair service, as well as its perception. It is based on several different principles that reflect its diversity:

The quality of the repair service can be measured objectively. The objective quality of the service means measurable values. Differences in quality can be quantified according to repaired machines and repair services;

The quality of the repair service must be user-oriented. According to them, the quality of repair products is in the first place in its subjective evaluation. The subjective quality of the repair service is a result of the customer's perception; therefore the repair service that satisfied one customer may be of poor quality for another customer. Consumers have a variety of requirements, repair products and services that meet these needs are determined by the highest quality;

Repair services cannot be stored, this is a result of their immateriality. They are actions aimed at making the inoperable machine operational, they cannot be touched, tasted or smelled, nor can they be possessed;

In terms of cost-effectiveness ratio, the quality of repair services is manifested through cost and price. Quality repair products and services perform a certain function at an affordable price, and also meet the standards at reasonable costs.

The quality of the repaired machine and offered repair service are interrelated, but at the same time they have a big difference. While the quality of the repaired machine depends on its characteristics, the service can be interpreted as a process from the first contact with the customer to the feedback on the use of the repaired machine by this customer. That is why if we want to determine whether a company provides quality repair services, we must follow the whole process.



**Fig. 1** Connection between business, management, processes, quality and reliability of the repaired machines and services

The quality of the repaired machines and offered services is directly dependent on the material and technical base of the repair production, the level of technology, the organization, the material and technical supply and the realization. It depends to a large extent on the qualification of the managerial and executive staff. Such a view orients us to the understanding that the quality of the repaired machines and repair services is a function of the quality of the processes on the basis of which the repair service is created as shown at Fig.1.

They, in turn, are the result of the quality of the system within which the machines are repaired. The environment in which the system operates plays a huge role in the quality of the system as a whole. Improving the quality of repaired machines and services is a complex and multifaceted process of great importance which reflects the efficiency and competitiveness of repair products on the market.

The business and management are strongly connected to the quality and reliability of the repaired machines and services within conditions of developed economic market. Modern practice shows that there can be no successful business without high quality and reliable goods and services. Business is the activity of making a profit from the production or trade of goods and services. The profit of the business depends on the marketability of the products from repaired machines and repair services. The ability of the product to be sold on the market is determined by its quality. The first thing that needs to be clarified when talking about the quality of repair services is what it is and what content is included in this concept. In order to be able to talk about the quality of the repair service, the service potential of the company, the service process and the results of the provided repair service are important. The service potential of the company includes the capabilities of the person (managers and workers) and the infrastructure of the company. The service process refers to the performance of the repair service provided, ie how quickly the service is provided. The results of the provided repair service are the perception of the customers. Since the purpose of the provided repair service is to create customer satisfaction, the quality of the service should be measured in a customer-oriented way [5, 6, 8].

Quality as a philosophical category expresses the inseparability of the existence of the object from its essential definition. It is related to the object as a whole, expressing its essence and is inseparable from it. Quality is relative, it is determined for a given period of time, changing for different periods.

The concept of quality has been studied since Aristotle in the third century BC. He defines it as differences between objects or a division of the principle of "good and bad". Hegel defines quality as identical with the definiteness of being, therefore, something ceases to be there when it exists, if it has lost its quality. Schuhart believes that quality is composed of objective physical characteristics and the subjective side (the perception of these things). According to Ishikawa, quality is a property that really satisfies consumers. In Chinese, the character for quality consists of two elements, "equilibrium" and "money."

According to the ISO 9000 standard, "Quality is the set of properties and characteristics of a product related to its ability to meet agreed or anticipated needs".

For the Japanese JIS standard, "Quality represents all the characteristics and performance of a product or service that can be evaluated to determine whether the product or service meets the purposes of its use."

In BDS "Quality is a set of properties of the product, determining its suitability to meet certain needs in accordance with its purpose."

All understandings and standards define quality as a set of properties that meet the needs and / or requirements of users. The satisfied consumer repeatedly returns to buy again and again the desired quality repair product or service, in other words, "Quality is the product that is not returned to you, but the consumer returns to buy it again."

What has been said so far about the quality of repair services can be summarized through the key quality criteria, namely customer satisfaction, consumer satisfaction. Consumer needs are diverse and complex. Depending on the cultural level, they express different needs that can be identified or anticipated. Satisfied customer requirements increase sales, improve reputation and expand the market share of the repair company [5 - 10].

The quality of the repaired machines or services is a result of the activity of a separate repair company, but the specific assessment of the quality is given by the external environment by the user of the repaired machine or the repair service. This makes quality a subjective concept. In this sense, whatever the vision of a repair company, it is important the customer's assessment of the quality of the repair service. This is the most important point in the philosophy of quality and should be taken into account by anyone involved in providing repair services.

## **CONCLUSIONS**

1. It is clarified what content is included in the concept of quality of repaired machines and repair services and what is this concept.

2. The main reasons for ensuring a high level of quality are relevant and important for modern repair production and repair services offered.

3. The importance of the connection between business, management, machine repair processes, quality and reliability of repaired machines and offered repair services is presented.

4. The principles that reflect the diversity in the understanding of the concept of quality of the repair service, as well as its perception are indicated.

## **REFERENCES**

- [1] Bekana D. (2020) Optimizing the maintenance of agro-industrial equipment, Academic Publishing House University of Ruse, p. 130, ISBN 978-954-712-800-2.
- [2] Delikostov T., (2020) Management of fuel combustion of internal combustion engines from agricultural and tractor equipment by maintaining the food system. Scientific Monograph. Ruse, Academic Publishing House University of Ruse, p.136, ISBN 978-954-712-799-9.
- [3] Kangelov P. (2019) Rebuilding electrolytic alloys coatings. Scientific Monograph. Academic Publishing House University of Ruse, p. 170, ISBN 978-954-712-785-2.
- [4] Nikolov M, (2019) Rebuilding Overlaid Coatings Obtained Through Vibrating Arc Overlaying Process in an Atmosphere of Shielding Gas and its Mixtures - Scientific Monograph, Academic Publishing House University of Ruse, p. 144. ISBN 978-954-712-756-2.
- [5] Nikolov M., P. Kangelov. (2012) Benefits from maintenance and repair in utilization of resources. IN: Mendeltech International 2012 – International Scientific Conference, No 1, Brno, 2012, ISBN 978-80-7375-625-3.
- [6] Nikolov, M., Stoyanov, V., (2014) Utilization of Resources in the Maintenance and Repair of Machines, Ruse, Ruse University Publishing Centre, p. 95, ISBN 978-954-712-607-7.
- [7] Todorov I., (2020), Reconditioning of belt conveyor details by vibrating arc overlaying process, IOP Conference Series: Materials Science and Engineering, Vol. 977, 012013, ISSN 1757- 8981.
- [8] Todorov I. (2019) A Research about Wear Process of Details from Belt Conveyor.// Agricultural, forest and transport machinery and technologies, Vol. VI, pp. 5-10, ISSN 2367-5888.

- [9] Dinolov O., N. Mihailov, L. Mihailov, T. Uzunov. (2015) Research methodology for energy-efficiency evaluation in pneumatic-transport processes. Sixth International Conference on Energy Efficiency and Agricultural Engineering, Ruse, Bulgaria, pp.749-754, ISBN:1311-9974.
- [10] Alipiev O., S. Marinov, T. Uzunov. Optimal tooth profile design of a gear shaper cutter when meshing with internal straight splines. Mechanism and Machine Theory, 2018, No Vol.129, pp. 70-79, ISSN 0094-114X

### **CONTACTS**

Mitko Nikolov, Department of Repair, Reliability, Mechanisms, Machines, Logistics and Chemical Technologies, Agrarian and Industrial Faculty, University of Ruse, 8, Studentska Str., 7017 Ruse, Bulgaria, e-mail: mnikolov@uni-ruse.bg