REASONS FOR BUSINESSMEN, MANAGERS AND EMPLOYEES OF WESTERN AND RUSSIAN ORGANIZATIONS TO DEAL WITH QUALITY MANAGEMENT OF PRODUCTS AND/OR SERVICES

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Abstract

The article discusses the main and additional reasons that motivate both foreign and domestic businessmen to focus on quality management issues, the main stages of the product life cycle, the impact of successful quality management on product costs, the law of tenfold increase in costs to overcome quality management failures, the iceberg law, the social consequences of improving quality, and information about the certification of quality management systems in accordance with the international ISO9001 standard for the beginning of 2025.

Keywords: quality management, manufacturer market, consumer market, consumer satisfaction, product competitiveness, cost, consequences of quality improvement, certification of quality management systems.

For successful product and/or service quality management,
all processes (works) must be completed correctly the first time and completed exactly on schedule
S.V. Ponomarev

Introduction

Many firms, companies and industrial enterprises of foreign countries, widely use quality management systems (QMS), made according to the requirements of international standards ISO 9000 series, for the management of production and support processes [1 - 3]. Unfortunately, the number of companies in the Russian Federation that have implemented a quality management system remains relatively small. You may be wondering, "Why do foreign businesspeople and then Russian entrepreneurs feel the need to engage in quality management?" Let's explore the answer to this question.

1. The initial reasons that prompted foreign businessmen to engage closely quality management issues

1.1. Main characteristics of the consumer market

Let's consider the situation that developed in Western Europe and Japan immediately after the end of World War II [1-3]. As in the former Soviet Union, a significant number of cities, towns, and industrial enterprises in these countries were in a state of devastation. Significant efforts and financial resources were required to overcome the post-war crisis.

It can be said that the situation in Western European countries and Japan in the 1940s and 1950s was similar to that in the former Soviet Union at the same time. From an economic perspective, during this period, the markets were dominated by producers and sellers, and there were so-called "producer markets" in all countries, where consumers purchased everything offered by sellers.

The same situation was the case in the former Soviet Union until 1991. The majority of the population had cash, but due to the shortage of goods at that time, it was difficult to buy anything with this money. In order to buy a TV, furniture, or a car, it was necessary to register in a specialized store in advance (several years in advance) and then wait for a long time for your turn to buy the ordered goods.

Under these conditions, businessmen and manufacturers had no need to worry about the quality of their products. In a shortage-driven economy, the price of goods was determined as follows [1-3].

Price = Production costs + Desired profit. (1.1)

For the reasons listed above, in Western European countries from 1946 to 1955 and in the former Soviet Union until 1991, manufacturers and sellers had the ability to set their own prices and achieve the desired profits. In this context, reducing design and production costs was not a primary concern for manufacturers, as the market allowed them to maintain prices at their desired levels.

1.2. The role of Deming's seminar in realizing the need to engage in product quality management [1 - 6]

In 1947, the so-called Marshall Plan was developed and implemented in the United States. According to this plan, the United States provided commodity loans to Germany, Japan, England, France, Spain, and other countries in order to help them recover from the aftermath of World War II. This included the deployment of specialists (metallurgists, chemists, engineers, etc.) to assist in the reconstruction of their economies.

As part of the Marshall Plan, E. W. Deming (1900-1993), the now widely known patriarch (guru) of quality, was sent to Japan to assist in the restoration of the electrical industry. Before the war and during World War II, Deming was engaged in research on the problems of statistical control and quality management of military products in the United States. After the end of the Second World War, he began to offer businessmen and top managers of American firms and enterprises with a proposal: "Let's start applying the experience of

product quality management and technological processes accumulated at defense enterprises during the war, at enterprises producing goods for the population." American business owners listened to him politely, smiled, but did not hear, because the goods produced at their enterprises were perfectly bought and without any quality management.

It should be noted that when providing assistance to someone, many sponsors prefer to give away something that is not the most valuable thing they have. Based on this, it can be assumed that in 1947, the leaders of the U.S. government agencies who sent Deming to help Japan did not consider his knowledge of methods and tools for product quality control and management to be valuable for the United States.

During his stay in Japan, while helping to restore the country's electrical industry, E.W. Deming, as a true scientist, could not help but talk about the results of his scientific research in the field of quality control and management. In 1950, he organized a seminar for the executives of 45 of Japan's largest companies. At this seminar, he told them about the possibilities of using product quality control and management to improve their competitiveness. At the end of the seminar, he said the following [1-6]: "Listen to me, and in five years, you will be competing with the West. Keep listening until the West asks for protection from you." These words turned out to be prophetic. In the early 60s of the twentieth century. Japan came to the forefront in the world, and after a while the whole world began to talk about the Japanese miracle, admiring it to the present day [1-6].

In the mid-60s of the twentieth century, owners and managers (managers) of enterprises, firms and companies in countries such as England, France, Germany, Italy, and the United States found that their products were being displaced (not only from the markets of Africa, Asia, and South America, but also from their own domestic markets) significantly higher-quality and less expensive Japanese goods. After studying the reasons for the situation that developed in 1964-1969, Western European and American businessmen realized the importance and necessity of addressing quality issues, which are an integral part of improving consumer satisfaction and product competitiveness.

1.3. Consumer satisfaction and product competitiveness

The concept of customer satisfaction.

Simplified, "consumer satisfaction" can be represented by the expression (1.2) as a function that depends on the following indicators [2, 4, 5, 6]:

$$Y = f(K, C, E, S, I, N, G, Ps, ...), \quad (1.2)$$

where Y is customer satisfaction; f is a function that determines the dependence of Y on the product characteristics listed below: K is quality; C is price; E is operating costs during service life; S is service life; I is the image of the manufacturer; N is reliability; G is warranty obligations and term their actions; Ps – availability of after-sales service, etc.

The last formula (provided that the values of C, I, N, G, and Ps are approximately the same for all types of products under consideration) can be simplified to the following form:

$$Y = K/(C+E) \quad (1.3)$$

and if the operating costs E are also approximately the same, then even to the following form:

$$Y = K/C \ . \quad (1.4)$$

From the simplified formulas considered, it is seen that in order to increase the satisfaction of consumers Y, it is necessary to increase the quality K of products and reduce the price C and operating costs E. It is obvious that the service life S, the image I of the company, the reliability N of products, the warranty obligations G and the level of after-sales service Ps should be increased. Note that the satisfaction of the consumer with the product - is the consumer's view on the product that he has already purchased or is going to buy.

The concept of product competitiveness.

Along with the concept discussed above, the term "product competitiveness" is often used, which can be simplified [2, 4, 5, 6] in the form of (1.5)

$$\mathcal{K} = F(K, C, E, S, I, N, G, Ps, ...) \approx \frac{K}{C+E} \approx \frac{K}{C}, \quad (1.5)$$

where F is a function (slightly different from the function f) that determines the dependence of product competitiveness on indicators-characteristics K, C, E, S, I, N, G, Ps, etc., already discussed above. Product competitiveness $\mathcal{K}$ is the view of the owners (shareholders) of an organization on the products produced (by this organization).

If consumers are satisfied with the products they have purchased, and they tell their relatives, friends, colleagues, and neighbors about their admiration for the excellent products they have bought, then it is safe to say that these products have a high level of competitiveness.

Thus, product competitiveness $\mathcal{K}$ and consumer satisfaction Y are quite similar concepts that represent interrelated perceptions of products:

- either by the managers and owners of the product-producing organization;
- or by the consumers who purchase the products.

From the simplified definition of the concept of "competitiveness" considered, it is seen that the competitiveness $\mathcal{K}$ can be increased either by increasing the quality of K, or by reducing the price of C. It is even better if, simultaneously with increasing the quality of products, its price will be reduced. In our opinion, the successful conquest of the English, French, German, Italian, and American domestic markets by Japanese goods in the second half of the 1960s was due to the fact that Japanese goods were of significantly higher quality (compared to Western European and American goods) at a significantly lower price.

Thus, American and Western European businessmen and industrialists came to realize the need to focus on quality after Japanese firms demonstrated *the power of Deming's teachings*, which had previously been overlooked by American government officials and businessmen.

1.4. Requirements of the modern "consumer market"

Starting in the second half of the 1960s, business conditions began to change. As a result, in the 1980s and 1990s, the old formula for successful business had

to be transformed [2, 4, 5, 6] into the modern formula (1.6)

Profit = Price – Production Costs. (1.6)

The modern market has quickly reduced the price of goods and forced manufacturers to reorient themselves to meet the needs and requirements of consumers, and the market, which was once a "producer market," has now transformed into a "consumer market." The transition from a "producer market" to a modern "consumer market" in the former Soviet Union is discussed in the book [7].

In today's "consumer market," the success of manufacturers depends on their ability to respond quickly and effectively to consumer demands. This speed determines which manufacturers and business owners are leaders and which are failures. The success of manufacturers hinges on their ability to achieve a well-defined goal that minimizes production costs while ensuring high-quality products at affordable prices for consumers [2, 4, 5, 6].

The most effective quality work model that contributes to increasing the competitiveness of products and the company is "Total Quality Management" (TQM), which is translated into Russian as "All-encompassing Quality Management". If a competitor is able to implement TQM as a quality work model or, at least, a quality management system faster than you, they will have a competitive speed, which means that the distance between them and you will begin to increase. The more you delay and wait, the more you will fall behind your competitor [1, 2, 4, 5].

The most effective way to increase the competitiveness of your company and its products is to be able to quickly manage the quality of your products in response to changing consumer demands, while minimizing the cost of ensuring that quality. According to the formula (1.6) for successful business, the current profit of an organization is the result of skillfully managing the quality of its products while minimizing the cost of designing and producing them.

1.5. The impact of successful quality management on production costs

Let's assume that there are two factories in a certain city that produce the same product. The first factory has a very successful process management system and produces high-quality products. However, the second factory pays less attention to process management, resulting in lower-quality products compared to the first factory.

Please think about this and answer the following question: Which of these two factories will have a higher production cost – the first or the second?

In previous years, it was often said that the cost of production would be higher at the first plant that successfully managed its quality. This answer is incorrect. To illustrate the incorrectness of this answer, consider the data in Table 1 below.

From table 1 it is seen that at the first and second plant launched in production the same amount of raw materials (materials, parts and components), sufficient for production of 1000000 pieces of finished products.

Table 1.

Comparison of the impact of quality management results on production costs at two factories

Characteristics of the plant	Raw materials and materials for product production, units	Produced products, units	Rejected products, units	Cost of production
Factory with high quality products	1 000 000	999 997	3	low
Factory with low quality products	1 000 000	800 000	200 000	high

The first plant, which successfully manages its processes and produces high-quality products, produces 999,997 units. (units) of products that meet the requirements, and a very small number of products (2-3 pcs.) are rejected by quality control inspectors. At the second plant (which does not manage the quality of production processes well), only 800,000 usable (high-quality) products are produced from the same number of raw materials (materials, parts, components) instead of 1,000,000. units of products turn out to be non-compliant (rejected) when their quality is checked by the plant's quality Control committee.

If not all 200,000 pieces of rejected products are final defects, i.e. some of these 200,000 low-quality products workers will be able to correct (re-make), then the plant will have to spend additional funds:

- to pay for additional quantities of raw materials (materials, spare parts, parts, components) used in the re-make (correct) of non-conforming units of products;
- for the payment of electricity consumed during the correction (alteration) of defective products;
- for the payment of labor costs for workers engaged in the correction (alteration) of these non-conforming products, etc.

All costs to produce defective products, recognized as final marriage, as well as the additional costs listed above, the plant will be forced to contribute to the cost of compliance with the requirements (good) products. If after such comments to ask: "At which of the considered factories the cost of production will be higher?" – it becomes obvious that production costs are higher at facilities where quality management is ineffective, and vice versa, the cost of production is lower at plants where quality is managed successfully.

Quality management specialists, factory owners, managers, specialists, and workers are well aware that successful quality management results not only in high-quality products, but also in reduced production costs. As a result, the first factory can sell its products at a lower price than the second factory.

As a result, the competitiveness $К \approx \frac{К}{Ц}$ of the first factory's products is higher than the competitiveness of the second factory's products. If the owners, managers,

employees, and workers of the second factory fail to implement quality management tools and techniques [1-6], profits will decrease, and the second factory may eventually go bankrupt and be closed.

Thus, the following are the initial reasons that prompted entrepreneurs and businessmen in England, France, Germany, Italy, the United States, and other developed countries to pay serious attention to the problems of ensuring and improving the quality of their enterprises, firms, and companies [2-6]:

- the displacement of Western goods by Japanese goods (which had significantly higher quality at significantly lower prices) in the second half of the 1960s;

- the high effectiveness of Deming's teachings on methods and tools for controlling and managing product quality, demonstrated by Japanese entrepreneurs to Western businessmen, who previously viewed quality management as a "poor" problem handled by "poor" specialists [1-6];

- the economic benefits of successful quality management, which, by improving the quality and reducing the cost of products, can increase customer satisfaction Y and product competitiveness $\mathcal{K}$.

In the 1970s, Western business owners and managers quickly realized that quality management was not a "poor" problem, but for a long time, quality specialists were still treated as "poor" people [1-6]. In the 1980s and 1990s, the vast majority of entrepreneurs and businesspeople in foreign countries came to fully understand the importance of quality and recognize the significant contribution of quality specialists to improving the competitiveness of products and ensuring the survival of companies in today's consumer market.

2. Additional reasons that motivate foreign and Russian businessmen to deal with quality management issues

2.1. The main enlarged stages of the product life cycle

Consider the main enlarged stages of the product life cycle [1 - 5], schematically presented in Fig. 1.

The first stage of the product life cycle begins long before the appearance of a prototype or model of this product. The marketing department should be responsible for carrying out the stage "Planning production and development of product requirements" at enterprises. This department conducts market research, i.e. studies the market, establishes the preferences and expectations of potential consumers, and then prepares proposals for the top management of the enterprise on which types of products should be designed and prepared for production, and which types of products should be modernized in order to meet the changing needs of the market. In the case of a decision to produce new products, the main result of this first stage is the development of requirements (technical specifications) for the products and the issuance of a task to the design department.

At the second stage, "Product Design and Development", designers and technologists translate product requirements into the language of drawings and technological instructions, according to which the production facilities of the enterprise will have to produce high-quality and competitive products.

The second stage is completed after testing the prototypes of the designed products, confirming that the designed products meet the requirements for their quality, and obtaining convincing evidence of the economic feasibility of producing new products.

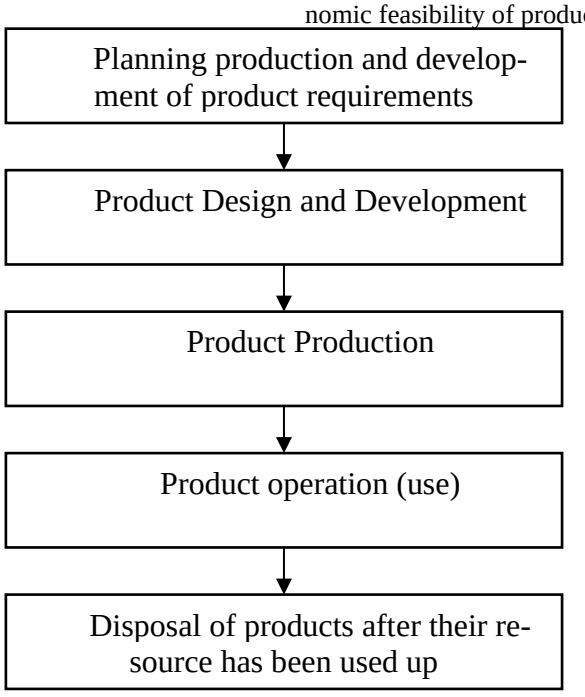

Fig. 1. Main enlarged stages of the product life cycle

The third stage, "Product Production," begins with the procurement of necessary materials, components, machines, equipment, and control tools, as well as the training and retraining of workers and employees, if necessary. Once these tasks are completed, the company can begin producing new products. The result of this stage is the production of mass-produced products, which are first sent to the technical control department, then to the warehouse, and finally to consumers.

The content of the fourth stage, "Product operation (use)", is clear from its name. At this stage, the manufacturer should assist the consumer in installing and commissioning their products or at least provide clear instructions on how to install and use the products.

At the first, second, third, and fourth stages, the international ISO 9000 series standards consider products to be intentional and intended for consumers. Product quality management at these stages must comply with the requirements of the ISO 9000 series standards.

At the fifth stage, "Disposal of products after their resource has been used up," the international ISO 9000 series standards consider products to be unintended. At this stage, the management of the disposal of unintended products (the conversion of products into waste, as defined by the 2015 edition of the ISO 9000 series standards) should be based on the international ISO 14000 series standards, which define the requirements for environmental quality management systems.

You may have a question: "At what stage of the product life cycle should product quality management begin?" Some students answer this question by saying that product quality management should begin at the production stage, while others say that it should begin at the design and development stage. Some students and more experienced professionals argue that product quality management should begin immediately during the first stage, during the planning and development of requirements for new (future) products.

2.2. The law of the tenfold increase in cost for overcoming failures when transitioning to the next stage of the product life

The need to address product quality management issues from the earliest stages of the product's life cycle is illustrated by the law of tenfold increase in the cost of overcoming failures in achieving the established quality. This law [1-6] is graphically represented in Figure 2.

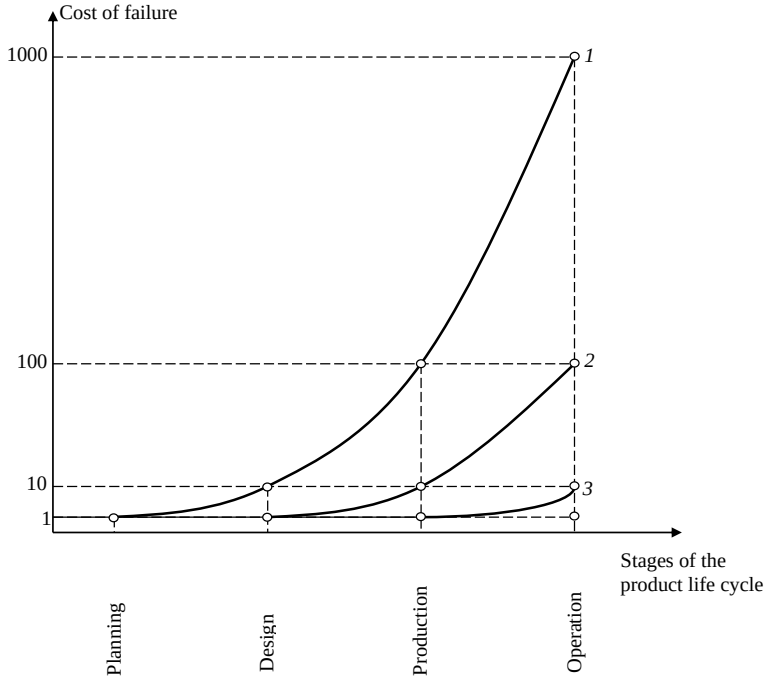

Fig. 2. The law of tenfold increase in the cost of overcoming failures in achieving the established quality [1 - 6]

Let's assume that during the planning of production and the development of requirements for a new product, an error was made in determining the value and/or tolerance range of one of the quality characteristics. If this error is detected at the same stage, its correction is usually not very expensive. Let's consider the cost of correcting this error at the first stage as a single unit, for example, it could be the cost of re-issuing (reprinting and re-approval) the established requirements (technical specifications) for the product.

Let's assume that this error was not detected at the first stage, but was discovered at the next stage, "Product Design and Development." Based on the global experience of quality management professionals, it is estimated that correcting this error (made at the first stage) during the second stage would cost approximately 10 times more (in addition to changing the established product requirements, several existing drawings and process instructions would need to be revised).

If an error made at the first stage is not detected at the second stage, but is only detected at the third stage, "Product Production," then its correction will cost 10 times more, i.e., 100 units (the first batch or part of it may be rejected).

The greatest costs of overcoming failures that occurred in the first stage will take place if the error is first detected in the fourth stage "Operation (use) of products". It is believed that in this case, the costs of overcoming failures will again increase by about 10 times. In this case, the manufacturer will have to send its representatives on business trips to consumers to eliminate defects, often have to recall products for reworking or repair, sometimes replace defective products with new ones.

The above ideas about a tenfold increase in the cost of overcoming failures during the transition from the first stage of the life cycle to subsequent stages are illustrated in Fig. 2 by Line 1.

If an error occurs at the second stage "Product design and development", then the law of a tenfold increase in the cost of overcoming failures (see Fig. 2) can be represented by line 2.

When an error occurs in the third stage, "Product Production", the law of tenfold increase in the cost of overcoming failures can be represented by line 3 in Figure 2.

Note: Lines 1, 2, and 3 in Figure 1.2 start from points with a value of one conventional unit. It is important to note that the values of this conventional unit may vary for each of these lines.

Let's consider an example that illustrates the law of tenfold increase in the cost of overcoming failures [2-6].

As you may know, in the summer of 2000, a Concorde aircraft crashed at Le Bourget Airport near Paris. In November 2001, it was announced that test flights (without passengers) would begin between Europe and North America.

The investigations conducted showed that the cause of the plane crash was a metal part that was on the airport's runway. When the Concorde plane was taking off, this part damaged the tire of the plane's wheel, and a piece of the tire (about the size of a brick) detached from the wheel due to centrifugal force and was thrown upward at high speed, damaging the fuel tank and causing a fire that killed all the passengers and crew members.

From the point of view of the law under consideration of a tenfold increase in the cost of overcoming failures, at the planning stage of the production of the Concorde aircraft, the possibility that a piece of the aircraft wheel tire could damage the fuel tank and cause a catastrophe was not taken into account. If at the planning stage such a possibility had been taken into account (for example, in the form of a requirement to place fuel tanks out of reach of objects thrown by the aircraft wheel or special protection of fuel tanks from mechanical damage), then the elimination of this error would cost one conventional unit (perhaps 1000 – 5000 dollars). According to the law in question, the cost of correcting this error at later stages of the Concorde's life cycle would have been as follows:

- during design: (10,000 to 50,000) dollars;
- during production: (100,000 to 500,000) dollars;
- during operation: (1 to 5 million) dollars.

However, this error was not detected by experts in any of the first three stages of the Concorde's life cycle, and it manifested itself in the fourth stage of operation as a sudden failure that led to a plane crash and loss of life.

After the crash, all Concorde planes in service were grounded, and experts conducted investigations to determine the cause of the crash. Then, new requirements for ensuring flight safety on Concorde aircraft were developed, and after the planning phase, design work was carried out and necessary changes were made to the aircraft's design. Subsequently, Concorde aircraft were upgraded at aircraft factories, and finally, in late autumn 2002, the first flights (without passengers) were conducted on these aircraft.

From the above, it is clear that the mistake made in the first stage of the Concorde aircraft's life cycle, which manifested itself in the fourth stage of "Product Operation (Use)," was extremely costly for the airlines that operated these supersonic aircraft. The lost profits (the aircraft were not carrying passengers for approximately 1.5 years, resulting in no revenue for the airlines) were likely in the millions, if not billions, of dollars. In addition, airlines had to spend money on upgrading their aircraft. In the case of the Concorde, it can be assumed that there was a twenty- or even thirty-fold increase in the cost of overcoming failures during the transition from one stage of the product lifecycle to the next.

2.3. The Iceberg Law

Another additional reason that motivates Western and Russian entrepreneurs to deal with quality issues is the so-called "iceberg" law (Fig. 3), which determines [1-6] the way information about an enterprise's failures to achieve the established quality is disseminated among consumers and potential customers of its products.

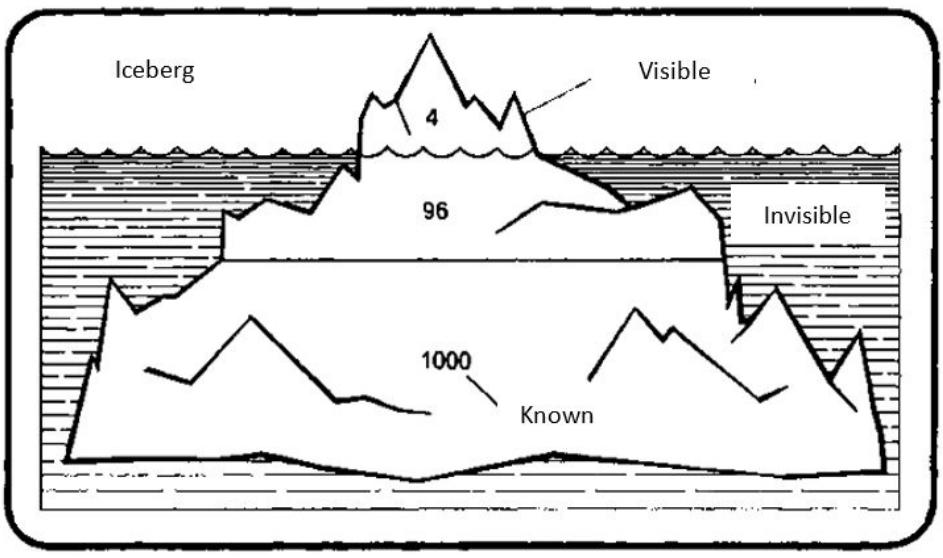

Fig. 3. Graphical illustration of the iceberg law [1-6]

Let's assume that during the quality control of products, 100 units of defective products were not detected by the technical control department and were sent to consumers. Based on the experience of Western quality management experts, it is estimated that on average, only four out of 100 dissatisfied consumers will file a complaint or make a claim with the manufacturer (supplier). Therefore, the visible part of the "iceberg" typically includes an average of only four percent of the total number of defective products that reach consumers. The remaining 96% of dissatisfied consumers (the invisible part of the "iceberg") usually do not report any defects to the manufacturer. However, global experience shows that each dissatisfied consumer reports that they have received defective products to an average of 10 or more potential consumers or customers. According to literature, this information about quality failures is sometimes shared by each dissatisfied consumer with up to 30 potential consumers or customers. Thus, when 4 complaints are received by the manufacturer, according to the law of the "iceberg" on average, it can be assumed that 100 units of defective products have penetrated to consumers, and it can be confidently stated that unsatisfied consumers reported the low quality of products to approximately 1000 - 3000 potential consumers and customers. This means that the manufacturer has lost approximately 1000 - 3000 new orders for its products.

If we recall the example of the Concorde plane crash discussed above, it is clear that the failure to achieve the quality of this aircraft was brought to the attention of hundreds of millions of people around the world by the media. From the perspective of the iceberg principle, this means [1-6] that hundreds of thousands, or even millions, of potential passengers who could have purchased tickets for these aircraft may have given up on their plans and opted for conventional subsonic jet aircraft instead. It can be argued that the airlines that owned Concorde aircraft suffered significant losses due to the decline in ticket sales for supersonic flights. In April 2003, several airlines that operated Concorde aircraft announced the discontinuation of regular flights between Paris and New York due to their unprofitability. Currently, Concorde flights have been completely discontinued, and the remaining aircraft are housed in aviation museums.

Thus, the following are additional reasons that encourage foreign and Russian entrepreneurs to deal with quality management issues [1-6]:

- the desire to increase the competitiveness of their products by reducing the costs of ensuring their quality (remember the law of tenfold increase in costs), which forces the management of enterprises, firms, and companies to start improving the quality of their products from the first stage of the product life cycle;

- the desire not to lose the company's image (remember the "iceberg" law) also motivates businesses, firms, and companies to pay the utmost attention to ensuring and improving product quality.

3. Social consequences of quality improvement [1 - 6]

Let's say that one of the factories in the city of Ensk has managed to significantly improve the quality of its products. As a result, the standard of living of not only the employees of this factory but also other residents of the city has significantly improved. These so-called social consequences of quality improvement are commonly illustrated using the "Deming value response" [2-6], as shown in Figure 4.

Improving product quality (Fig. 4) leads to reduced production costs (product costs) due to:

1) reducing the number of errors made by workers during production processes, as "all processes are performed correctly the first time and on time";

2) reducing the number of rework and corrections of non-conforming products;

3) reducing the number of delays and downtime;

4) improving the use of materials (raw materials, parts, and components) and time, as there is no need to rework or correct non-conforming products.

As a result of all of the above, productivity will increase (the number of products produced will increase) and the cost of production will decrease. By reducing the cost of production, the price of the product can be lowered. As a result, consumers will start to buy this higher-quality product, which is also sold at a lower price. This will lead to increased customer satisfaction Y and, at the same time, increased product competitiveness $\mathcal{K}$. All of this will allow the factory (enterprise) that has improved the quality of its products to retain, expand, and capture more and more sectors of its market.

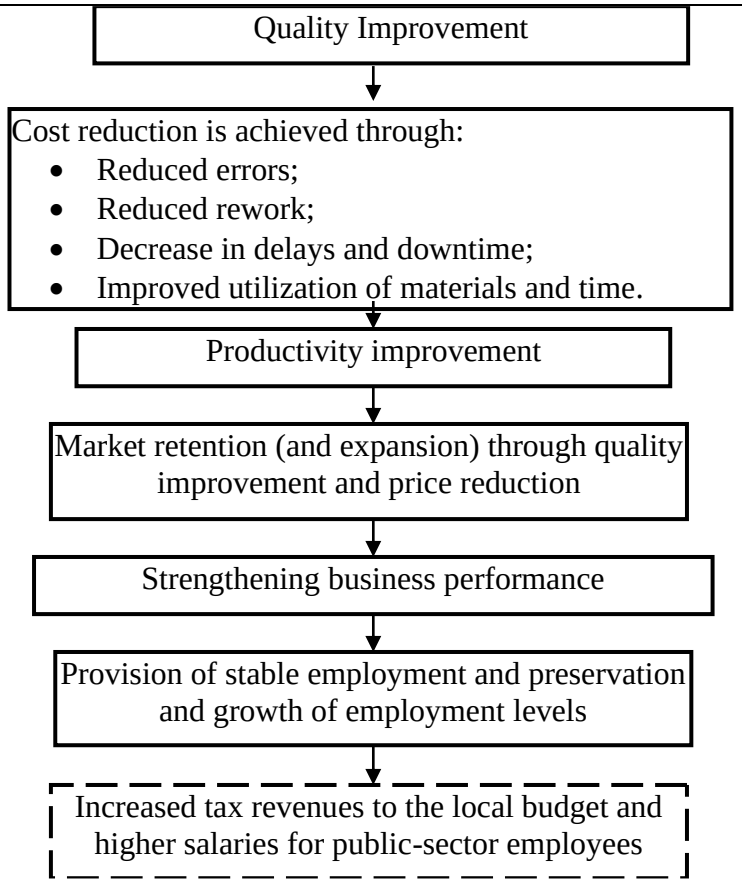

Fig. 4. Deming's Chain Reaction

Holding (capturing) the market by improving quality and reducing prices can significantly strengthen a business (business activity). By increasing profits, it is possible to purchase new machines, equipment, and production lines, as well as expand the production and sales of products. This, in turn, leads to additional profit growth.

As the business grows and profits increase, the factory will need more workers and employees. All the factory's employees will have stable employment, and their children and grandchildren also could find well-paying jobs at the factory due to the increased number of job opportunities. This is an important aspect of the social impact of improving the factory's product quality.

The six steps (phases, stages) of the Deming chain reaction can be supplemented with a seventh stage, which is depicted in Figure 1.4 as a dotted rectangle.

Increased product sales, strengthened business, increased factory profits, and increased salaries for workers and employees will lead to increased taxes in the local city budget. As a result, the city government will be able to increase the salaries of public sector employees (teachers, doctors, nurses, and paramedics) paid from the municipal budget, and purchase equipment for schools and hospitals in the city. This second component of the social consequences of improving the quality of products at a factory located in a city is very important. As a result of the increase in public sector employees' salaries, the workers and employees of a successful factory will also benefit, as they and their families will receive better medical care, and their children and grandchildren will have access to schools equipped with modern computers and educational technology. Teachers, doctors, nurses, and other public employees will receive higher salaries and be able to perform their work better.

Western businessmen, entrepreneurs, and company executives have long understood that relationships with employees and workers should be based on the principles of social responsibility, which help to maintain a high level of employee satisfaction. This issue is currently receiving a lot of attention. The international standards of the SA 18000 series provide recommendations for ensuring the necessary level of social satisfaction among workers and employees.

The social consequences of quality improvement discussed in this section illustrate the fact that successful quality management is not only aimed at:

- improving quality; reducing costs;
- increasing customer satisfaction;
- increasing product competitiveness;

but also at increasing social satisfaction:

- of the organization's workers and employees;
- of the local community.

4. Information about the certification of quality management systems in accordance with the requirements of the international ISO9001 standard at the beginning of 2025

Article [8] provides information about the results of certification of quality management systems according to ISO 9001 requirements (from The ISO Survey 2024 report) as of the beginning of 2025.

	Number of certificates/Number of sites
People's Republic of China	651831/999266
Italy	101426/157890
India	95007/116890
Germany	45983/104193
Great Britain	32988/55589
United States of America	28783/47463
Russian Federation	1804/2303

When comparing the data on quality management system certification in the People's Republic of China and the Russian Federation (presented above), it becomes clear why consumer goods (mobile phones, shirts, T-shirts, underwear, socks, trousers, etc.) produced in China by companies with certified quality management systems are widely available in public stores in the United States, France, Germany, and other countries. The fact is that these products are of high quality and have a relatively low price, which makes them highly competitive (refer to Section 1.5. The Impact of Successful Quality Management on Product Costs).

Due to the fact that there are very few companies in the Russian Federation that have certified their quality management systems, it is understandable why there are few products from Russian companies in public stores in the United States, France, Germany, and other countries. Based on the above, it can be concluded that the future successful development of the Russian Federation's economy is closely linked to the implementation and widespread use of quality management systems in organizations and enterprises in our country. In this regard, I would like to recall the words of the Russian philosopher Ivan Alexandrovich Ilyin: "**…the Russian people have only one way out and one salvation - a return to quality and its culture**", as stated in his article "Salvation in Quality," published in 1928 in the journal "Russian Bell." [9]

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