

FOREIGN EXPERIENCE OF IMPLEMENTATION OF “LEAN PRODUCTION”

Inobat Yaxyayeva

Abstract. Within the framework of this article, the most striking examples of foreign experience in implementing the principles of lean manufacturing are considered as one of the ways to influence the competitive advantage of an organization. The results of their implementation are analyzed, a comparative assessment of their effectiveness is carried out, one of the main problems of the implementation of Lean technologies in our country is formulated.

Index terms - lean technologies, kaizen, main goal, marketing area, management; personnel assesment

1. INTRODUCTION

The aim of the study is to analyze the results of implementing the principles of lean production on the example of specific foreign companies, to conduct a comparative assessment of their effectiveness, taking into account the experience of their implementation at leading Russian companies)

In order to have a competitive advantage in the market, modern companies strive to constantly introduce into their work innovative concepts of business process management in the enterprise, even though their implementation is often costly and time consuming. One of these innovative approaches is the implementation of lean manufacturing.[1]

Lean manufacturing (Lean-technology) is, in fact, a systematic approach to optimizing the production process by reducing costs and losses. The peculiarity of Lean technologies is that their implementation does not require large costs and almost immediately gives a real effect, which can be expressed in concrete savings in money. [2]

As practice shows, in each country, the development of Lean technologies proceeded according to its own scenario, taking into account the cultural characteristics of the country and the style of company management.[3]

2 ANALYSIS AND RESULTS

The founder of the concept of lean manufacturing is Japan, and in particular Toyota. When in the 50s of the XX century the production volumes of Toyota decreased to the minimum, its owner Taiichi Ono, taking into account that the consumer is insolvent, and the principles of mass production are not suitable for the market, begins to change the scheme of his company. According to Taiichi Ohno, the traditional continuous assembly lines of production (the so-called "Henry Ford lines") had a big disadvantage in the form of overproduction and an increase in inventory.[4]

As a result, Taiichi Ohno realized that it would be more efficient to produce goods in small batches, for which it was necessary to improve the changeover of machines. Another important element was taken from

American supermarkets - restocking only as they decrease, the so-called "pull" approach. The essence of this approach is that all parts for the production of the next batch are delivered to the conveyor "just in time".[5]

All changes and problems at the enterprise were constantly discussed, which contributed to the regular solution of all problems and the improvement of product quality. This has become one of the main principles of lean manufacturing - kaizen.

Kaizen is a Japanese word that means permanent change, literally change (Kai) for the better (Zen). This concept focuses on the use of tools to quickly reduce muda (waste) to improve safety, quality, supply, cost, speed, flexibility and responsiveness to internal and external customer needs. Kaizen philosophy is designed to carry out continuous business improvement, but it is applicable not only in work, but also can help to restore order in life.[6]

The main difference is that companies operating on the principles of kaizen organize the inseparable work of the sales department and the production direction. Such a company produces only those products that are needed on the market and in the amount that can be sold. To fully see the advantages of applying the kaizen philosophy over the traditional control system, consider their main differences, shown in Fig.1.

• Inobat Yaxyayeva, senior teacher at Tashkent state university of economics, Tashkent city, Republic of Uzbekistan

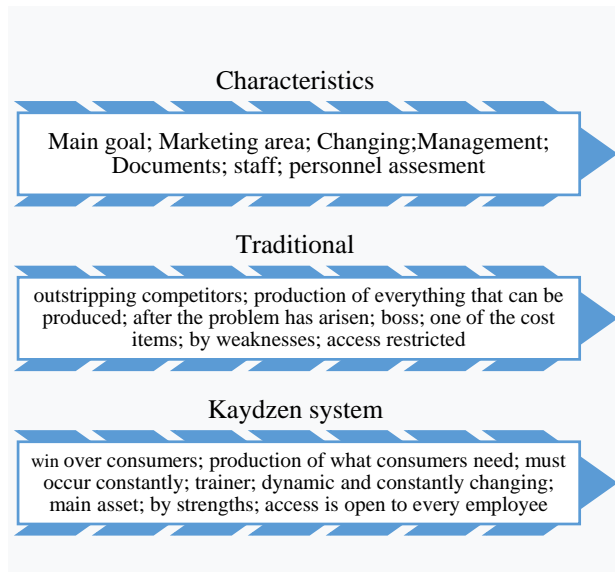


Fig.1. Main differences of traditional system from Kaydzen

Over the years, the introduction of the Kaizen philosophy has allowed Toyota to:

- a) reduce the level of defective products by 90%;
- b) increase labor productivity by 2 times;
- c) reduce the assembly time of products by 40%, as well as speed up the process of their manufacture by 2.5 times;
- d) reduce reserves of resources by 80%.

The effective implementation of an innovative approach by Toyota has had a positive effect on the development of most enterprises nationwide. In the 90s. XX century 80% of all rationalization proposals were introduced in Japan, while in the United States the level of innovation was about 40%, and in Europe - 30%.

An example of the successful implementation of Lean technologies in the United States is the experience of Boeing, one of the first American companies to actively introduce innovative methods into their production, management and organizational processes in the early 90s. XX century in order to improve the quality and reduce the cost of products, due to the high growth of competition in the aircraft market.[7]

As a basis, the company chose the "9-step plan":

- mapping the value stream and its analysis;
- line balancing;
- work standardization;
- visualization of the process;
- setting the sequence / stages of the processes;
- installation of organized supply lines;
- improvement of the process through the reorganization of the main line;
- transformation of the line into impulse;
- transformation of a line into a constantly moving one.

During the initial period of implementation of Lean technologies, Boeing has achieved the following results:

- a defect reduction program, due to which the scrap rate was reduced by 90%, the program is still working, since the company adheres to the concept of continuous improvement;
- reduction of production areas from 4

million m² to 1.5 million m² due to the creation of one continuous assembly line instead of several; - reduction of energy costs and warehouse rent; - growth of labor productivity by 40%; - reducing the time for assembling products by 50%, as well as speeding up their manufacture by 2 times;

- development and production of more compact equipment in order to reduce costs; - after many years of successful operation of the lean manufacturing system, the company prepares Lean training programs for partners and suppliers of the company [6]. Boeing has undergone many changes over the years. Currently, the company has formed a culture in which decisions are made collectively, every employee of the organization is involved in the change process, and there is absolutely no competition between the departments. All this contributes to the favorable development of the lean production system in the company.

Lean manufacturing principles are being actively introduced in Western Europe. Airbus deserves special attention here. Initially, the company was a union of several European aircraft manufacturers, in order to simplify the structure, reduce costs and maintain competitiveness with the American Boeing company, in the early 2000s, the supervisory board of the union decided to restructure the consortium and form an integrated company on its basis. The integration process was accompanied by the active implementation of Lean technologies, which to this day are an integral culture of the organization.

Integration into a single company allowed Airbus to:

- a) reduce production area by 3 times;
- b) reduce the assembly time of products by 60%, as well as speed up the process of their manufacture by 1.5 times;
- c) reduce stocks of resources by 60%;
- d) increase labor productivity by 30%;
- e) save on expenses up to \$ 1 billion per year.[8]

The introduction of a lean manufacturing system has become an urgent way to influence the competitive advantage in our country as well, the process of introducing innovative technologies at domestic enterprises began later than that of foreign companies, and, first of all, relied on their experience.[9]

The main difficulty in implementing Lean-technology concepts in Russian companies is the difficulty of transition of company employees to new production principles, skeptical and sometimes hostile attitude to innovations directly affects the efficiency of the implementation process.

The experience of implementation in the mid-2000s by the largest companies (KamAZ, GAZ Group, Rusal, Sberbank, etc.) of lean manufacturing technologies in general shows similar average results, namely:

- growth of production output by 30%;
- increase in labor productivity by 20%;
- decrease in the number of rejects by 40%;
- increase in the rate of production by 35%.

The main indicators improved as a result of the implementation of the principles of lean manufacturing and obtained on the basis of the experience of foreign companies are shown in

As a result, the improvement of the indicators shown in Figure 1, at various stages of implementation,

companies managed to increase the level of remuneration, optimize the number of employees, reduce the lead time, increase their volumes, and, in general, achieve an economic effect of several billion dollars.[10]

An example of a successful implementation of a lean manufacturing system is Japanese companies, about 90% of companies in Japan use the basic principles of Lean technologies, in the USA the volume of such companies is more than 60%. In the Russian Federation, organizations are just embarking on the path of mastering these technologies, and only about 5% of companies have implemented a lean manufacturing system at present.[11]

First of all, this is due to the fact that in Russia, industrial enterprises have large internal reserves of development, if they are used correctly, it is possible to significantly improve operating indicators such as production, inventory turnover, and the level of defectiveness. The problem is that business leaders usually do not delve into the intricacies of processes and take the path of extensive development. Unfortunately, the fact that our country is rich in resources and they are much cheaper than in most other countries allows such decisions to be made.

3 CONCLUSIONS

Based on the experience of foreign companies, it can be concluded that the introduction of lean production technologies to ensure an increase in the efficiency of the production system will significantly reduce costs, increase labor productivity, improve the production process, achieve high financial performance, increase the competitiveness of the enterprise and achieve many other qualitative and quantitative changes.

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