

STUDY OF «LEAN PRODUCTION» TECHNOLOGY APPLICATION AT DOMESTIC AND FOREIGN ENTERPRISES

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ABSTRACT

The study of "Lean Production" technology application experience at foreign and domestic enterprises was performed. The features of lean manufacturing technique application and implementation are revealed at foreign and domestic enterprises in the context of eight criteria. At the country level identified the common grounds in this process are determined at a country level and specific tools are determined implemented at enterprises.

A significant gap and lag of Russian companies in the implementation of lean manufacturing technology tools is determined. The main reason of this is an inadequate understanding of scientific and methodological principles concerning "Lean production" concept and its philosophy by domestic experts, the lack of interest among owners in the process of production modernization and the availability of a formal approach to the implementation of lean manufacturing technology among managers.

The ways of "Lean production" technology implementation process are determined at domestic enterprises. The main way of a Russian company development is the vector of its ideology and corporate culture development based on the principles of lean manufacturing, as well as on production specifics focused on certain reserves of production components, on the mentality of a Russian consumer, who will eventually lead to transition into a qualitatively different development trajectory with the obtaining of a hopping systemic effect.

Key Words: «Lean Production» Technology, Technology Tools, Especially the Introduction, the Domestic Experience, Corporate Culture

INTRODUCTION

In modern world, the overwhelming majority of companies which are the world leaders in their respective industries (Toyota, Ford, Boeing, Airbus, GE, Scania, Alcoa, Xerox and others) apply actively the lean manufacturing system (D.P. Womeck., 2004, p. 473; Sheree Hanna, 2014). Russia fell behind other countries in terms of familiarity with lean manufacturing for decades. There is a high demand for it today. First, it's the desire to make up for lost time, and secondly it a vital necessity. This is especially true for large industrial enterprises with the heritage of the past in the form of mass production with its large batches, worn-out equipment and an excessively large staff of employees. I.e. those companies who understand that they will not be competitive if they do not begin to take immediate measures. There is an increase of domestic enterprise number in recent years. These enterprises upgrade their quality management systems, using the concept of lean manufacturing. There are their own peculiarities of lean production concept in different countries (Michael A. Cusumano, 2016). The experience of lean production implementation in Russia and in the developed countries has an important feature. A

great importance is provided for lean manufacturing tools at Russian enterprises. And a great attention is given to the development of lean manufacturing ideology and corporate management culture at foreign organizations (Safronova K.O., 2012, p. 431). However, the tools of lean manufacturing do not work without an ideology. The primary issues are the issues of thinking and the implementation of rational proposals.

RESEARCH METHOD

Paper objective: to investigate the application and implementation of «Lean Production» technology issues at enterprises. The study was conducted using the method of article literary review and other materials on the use and the implementation of "Lean production" technology at different branch enterprises in different countries. The resulting material was subjected to the comparative analysis in order to identify the specific application of manufacturing technique at enterprises. This allowed proposing the ways of the studied technology application improvement during the next stage.

STUDY RESULTS

"Lean production" system includes a large number of tools and techniques from these approaches, and often management approaches (Kuzmin A.M, 2007, p. 19; Nikulina O.V., Konovalenko D.G., 2014, p. 372; Michael Ballé, James Morgan, and Durward K. Sobek II, 2016). Moreover, the composition of applied tools will depend on the conditions of particular enterprise specific objectives. The table below shows the features of "lean production" concept application in different countries.

Table 1
COUNTRY FEATURES OF "LEAN PRODUCTION" CONCEPT APPLICATION

Country	Tools implemented by foreign companies	«Pioneer» companies
Brazil	Kaizen, Just-in-time, TQM, ISO 9000	«Fiat Supplier Simple»
Germany	«Just-in-time», «Just-in-sequence delivery to production lines», flow charts, schedules emergency plans per business/customer.	«Volvo Production System»
Canada	Just-in-time	«Canadian Automotive Production»
China	Kaizen, система менеджмента качества, ISO 9001:2008, Kaizen, 5S, SMED, TPM, Kanban	«Covidien», «Lenovo», «Ingersoll Rand», «Metso», «Suntory»
Russia	Kaizen, Kanban, push flow, TPM, система 5S, VSM, visual control, standardization, Just-in-time, TQM	«GAZ production system»
USA	pull system, visual management, standardize work and safety, kaizen, Lean Manufacturing +Six Sigma	Lean Project Delivery™ System, Flexible Manufacturing System
Sweden	Total Quality Management, ISO 9000:2000, Just-in-time, standardize work and safety, kaizen	Model for an effective supplier – buyer relationship
Japan	Kaizen, Kanban, Handling circles, visual, management, standardization, Just-in-time, TQM	Toyota Production System, Honda Production System and etc

Each company uses a specific set of tools (Lean manufacturing, 2016). In the future, these tools become the components of the operating system, which has a unique name of the company using these tools (Jeffrey K. Liker, 2004, p. 268). The first Russian companies which applied lean manufacturing are the Gorky Automobile Plant ("GAZ Group"), VAZ, KAMAZ, Rusal, EvrazHolding, Eurokhym, VSMPO-AVISMA, OJSC "KUMZ", SeverStal-auto, etc. The interest in "lean production" concept was caused by an increased inflow of leading foreign companies to the Russian market, which use the concept methods. In order to be competitive, Russian companies have to optimize their production and business processes (Razumov-Razdolov K.L., 2008, p. 16; Tulchinsky S., date of appeal 10.10.2014).

As a rule, Russian companies experience significant difficulties at the implementation of lean production rules. Often their reasons are the following ones: a) the lack of methodology deep understanding among the experts who undertake to carry out lean-conversions, and focus primarily on symptoms; b) the lack of methodology adaptation to the peculiarities of a particular organization, the use of the most well described procedures to deal with any organizational problems; c) the lack of a systematic approach in the transformations of an organization, the use lean manufacturing system as a set of operational-level instruments; d) the introduction of a formal project with formal objectives and formal outcomes; e) the lack of specialized knowledge and skills for a lean manufacturing project implementation; e) the lack of interest among owners and top managers; g) the complexity of the entire lean system architecture understanding (philosophical principles, systems and tools, the real production problems they solve); h) the resistance to changes on the part of employees in relation to the fear of non-compliance with new requirements and the fear of losing their jobs, as well as the reluctance to increase the loads at the same salary (Kuzmin A.M, 2007, p. 19; Nikulina O.V., Konovalenko D.G., 2014, p. 372; Razumov-Razdolov K.L., 2008, p. 16).

After the analysis of information from different sources about the peculiarities of lean production implementation in the management systems of different domestic and foreign enterprises (Kononov V.Y., V.E., date of appeal 17.10.2014; I. Pavlovskaya, date of appeal: 10/20/2014; Rabunets P., date of appeal: 12.10.2014; J. Womack and D. Jones, 2005, p.37; J.E. Harbour, 1981; O. Fiume and J. Cunningham, 2003, p.113; Jacob Stoller, 2015, p.353). The main criteria were revealed by which one can see the differences of "Lean Production" system implementation in Russia and abroad.

Table 2
THE PECULIARITIES OF LEAN PRODUCTION IMPLEMENTATION AT DOMESTIC AND FOREIGN ENTERPRISES

Criteria	Russian enterprises	Foreign enterprises (USA, Japan, etc.)
The role of leadership	The management rarely pays its attention to the elimination of losses and forgets about a value approach.	Management promotes actively the system and participates in the implementation, as corporate strategy of permanent cost reduction is in the rank of the philosophy of life of all enterprise employees.
The approach to lean manufacturing system implementation	Approximately one-third of Russian companies have the experience of lean manufacturing implementation, exhausted in most cases by the use of one or two instruments. Most enterprises make "photocopies" of foreign techniques.	They try to implement the system, aimed at strategic goal achievement.
	Western approach (Lean Production). Western approach is focused on getting fast business results and implemented according to "top - down" principle. The implementation is carried out by a management team who takes all decisions on the production and organization of work at each site, determine the requirements and formulate rules, create regulations for the implementation of value stream. All employees (ordinary workers) must comply with these regulations strictly. Practically they introduce few things in them.	The Eastern approach (Japanese-TPS) is primarily involved in the process of all staff, the inclusion of each employee intellect in the rational organization of his working space, and then the production process. Of course, this method of implementation is slower. At first, it requires enormous efforts to overcome the inertia and the disbelief of workers, the learning of lean manufacturing basics. But in the end it provides higher and more consistent results, and then it allows implementing full-length projects of lean manufacturing easier and more effectively.
Time spent by staff on activity improvement	Top management, middle managers - 10%, Foremen - 5%, Operators - 0%	Top management, middle managers - 60% Foremen - 20% Operators 15%.
Motivation system at lean manufacturing implementation	Based solely on the cash reward for any proposal, a written instruction, etc. The heads of enterprises punish the guilty ones in any problem. This leads to the fact that employees hide mistakes and drive them deep into the sources of problems.	The presentation of awards based on the performance of individual work plan established by the company management. Leaders try to correct errors, in their turn, without the punishment of workers, but rather encouraging for the identified problems and improvement suggestions.
The developers of lean manufacturing system at an enterprise	Often the project of lean production system introduction is implemented by the man who does not have sufficient theoretical and practical skills.	The management of companies performs a serious recruitment of specialists in the working groups on the implementation of lean manufacturing system.

The attitudes for standards, procedures, instructions	The formal attitude of employees to any methods, standards, regulations, developed in the course of lean production system implementation.	Any standard, technique, guideline is developed together with the workers and is adapted to a specific enterprise activity during the implementation of lean manufacturing.
The scale of enterprises, implementing lean manufacturing	Approximately 30% i.e. the companies which have to compete seriously with foreign and domestic manufacturers and companies with foreign capital.	In the United States, Japan and other developed countries more than 80% of companies regularly use the tools of lean production in their activities.
The degree of information openness of information about the results of lean manufacturing implementation	They do not disclose figures, they consider that lean technologies are an internal resource, which is able to develop Russian economy and make it competitive on a global scale.	They tell rather openly what they do and what results they achieve.

CONCLUSIONS

In most cases, Russian companies use a specific set of ready-made tools for lean manufacturing. This choice depends on the scope of an organization, its life cycle and financial condition development; a company needs (tasks), a technological process, an economic situation in a country, as well as on the problems faced by an enterprise (a company). The selection of lean production necessary tools and not the creation of ideology and the corporate culture of lean production is the basic approach of the Russian enterprises today for performance improvement.

Despite the lag of Russian enterprises as compared to foreign ones at the implementation of lean production system, the study showed that they have the development reserve. It is assumed that they may overcome an existing gap, rather than relying on ready-made methods of "Toyota" company or other foreign companies. Russian industry needs to develop its own path through the analysis of all the errors; the consideration of Russian people mentality; the specifics of the domestic industrial production, which is focused on certain stocks of raw materials, components and materials; the consideration of the ambiguous relationship between the suppliers and the manufacturers; the consideration of Russian consumer tastes and preferences.

SUMMARY

The analysis of national experience in the implementation of lean manufacturing at machine-building enterprises showed that the problems are scientific and methodological ones. Enterprises study the foreign experience in this area and try to apply it in its practice by the method of trials and errors. Thus, not all expectations are met. The experience of "Lean production" concept application cannot be used in domestic practice using a template principle. The lag of the Russian enterprises in the implementation of lean manufacturing techniques with a gap can be overcome by an essentially qualitative way, reaching a significant abrupt systemic effect. This is the only qualitative way to create a corporate culture and an ideology, its new instruments, based on the principles of lean production, contributing to cost savings, the production optimization concerning a desired product in terms of Russian realities and facilitating the transition to a qualitatively new trajectory of a domestic enterprise development.

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