REVISTA INCLUSIONES

TRABAJO EN EQUIPO SIN FRONTERAS

Revista de Humanidades y Ciencias Sociales

Volumen 7 . Número Especial
Octubre / Diciembre
2020
ISSN 0719-4706

REVISTA
INCLUSIONES M.R.
REVISTA DE HUMANIDADES
Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA
EDITORIAL

REVISTA INCLUSIONES M.R.
REVISTA DE HUMANIDADES Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA EDITORIAL

REVISTA INCLUSIONES M.R.
REVISTA DE HUMANIDADES Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA EDITORIAL

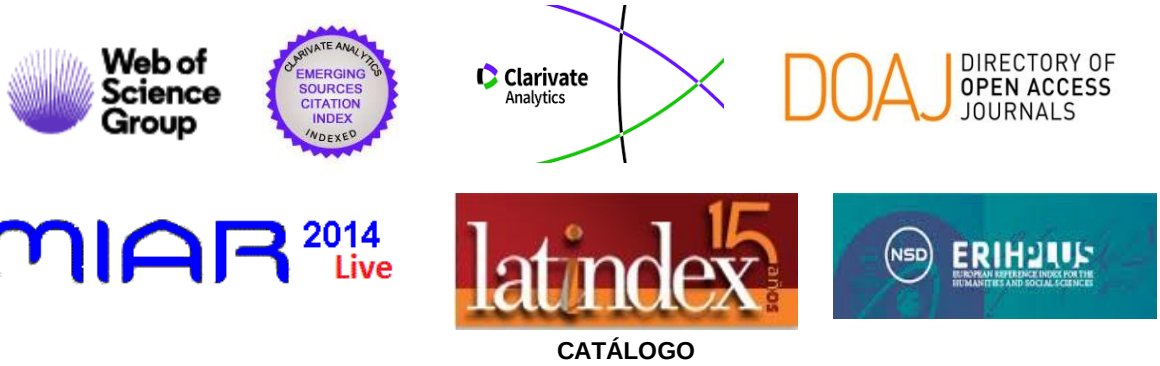
REVISTA
INCLUSIONES M.R.
REVISTA DE HUMANIDADES
Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA
EDITORIAL

Editorial Cuadernos de Sofía
Santiago – Chile
OBU – C HILE

Indización, Repositorios y Bases de Datos Académicas

Revista Inclusiones, se encuentra indizada en:



CATÁLOGO

BIBLIOTECA UNIVERSIDAD DE CONCEPCIÓN

REVISTA INCLUSIONES M.R.
REVISTA DE HUMANIDADES Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA EDITORIAL

ISSN 0719-4706 - Volumen 7 / Número Especial / Octubre – Diciembre 2020 pp. 13-28

ECONOMIC MECHANISM OF FUNCTIONING OF THE PRODUCTION SYSTEM BASED ON THE USE OF LEAN TECHNOLOGIES

Ph. D. Irina V. Chistnikova
Belgorod State University, Russia
0000-0002-9653-9929
chistnikova@bsu.edu.ru
Ph. D. Marina V. Antonova
Belgorod University of Cooperation, Economics and Law, Russia
0000-0001-7106-5352
antonovamv@yandex.ru
Ph. D. Elizaveta G. Serova
Belgorod University of Cooperation, Economics and Law, Russia
0000-0002-4780-7819
serovaelizavetag@yandex.ru
Ph. D. Igor A. Skliarenko
Belgorod University of Cooperation, Economics and Law, Russia
0000-0003-2685-0110
sklyarenkoia@bk.ru
Ph. D. Elena S. Alekhina
Belgorod University of Cooperation, Economics and Law, Russia
0000-0003-4560-7693
elenaalyokhina@mail.ru

Fecha de Recepción: 08 de junio de 2020 – **Fecha Revisión**: 16 de junio de 2020

Fecha de Aceptación: 18 de septiembre 2020 – **Fecha de Publicación**: 01 de octubre de 2020

Abstract

The article is devoted to the study and formalization of the economic mechanism of production systems that use lean technologies. Based on the generalization of scientific theories, the content of the economic mechanism of production systems as a specific process of production and economic activity, organized with the principles in mind, is formulated. The key features and management aspects of the economic mechanism of the production system functioning based on lean technologies are identified.

Keywords

Lean technologies – Lean manufacturing – Economic mechanism – Production system

Para Citar este Artículo:

Chistnikova, Irina V.; Antonova, Marina V.; Serova, Elizaveta G.; Skliarenko, Igor A. y Alekhina, Elena S. Economic mechanism of functioning of the production system based on the use of lean technologies. Revista Inclusiones Vol: 7 num Especial (2020): 13-28.

Introduction

The practical significance of improving the efficiency of enterprises does not lose its relevance. Improvement of production processes can be achieved through the use of lean technologies.

The desire to adopt aspects of lean production arises in innovation-oriented companies. For enterprises in most countries of the world, lean technologies are the opposite of the usual methods of work, since they are characterized by continuous improvement (gradual innovation), rather than radical innovation[1].

Lean technologies operate with non-standard approaches and tools for organizing and managing production and economic activities, focused on using undervalued sources of profit growth and company competitiveness.

Lean manufacturing brings with it a new concept of organization that changes people's views on control. New approaches to management can coexist with the traditional concept[2].

The economic basis of lean technologies is to minimize costs due to organizational improvements in the complex system of interaction between the main production, auxiliary and service farms. The workflow balancing mechanism helps ensure the stability of the company's operations.

The development of the production system based on the use of lean technologies should be integral, that is, it should be interconnected in a single economic mechanism.

Despite the fairly wide spread of lean production in various organizations, the aspect of the economic mechanism of lean technology has not been sufficiently reflected, there is a need for its development. There is a lack of research on the economic mechanism of the production system and practical recommendations for identifying the potential for improving production efficiency by identifying losses.

The analysis of literature data and problem statement

"In the most General form, the economic mechanism is usually defined as a necessary relationship that naturally occurs between various economic phenomena"[3].

The economic mechanism "is determined by the nature of the initial phenomenon or the final result of a series of phenomena. The constituent elements are simultaneously the initial phenomenon, the final phenomena, and the entire process that occurs in the interval between them"[4].

---

[1] A. B. Abdallah; S. E. Dahiyat y Y. Matsui, “Lean Management and Innovation Performance: Evidence from International Manufacturing Companies”, Management Research Review Vol: 42 num 2 (2019): 239–262

[2] S. Tillema y M. Steen, “Co-Existing Concepts of Management Control. The Containment of Tensions Due to the Implementation of Lean Production”, Management Accounting Research num 27 (2015): 67–83

[3] A. Kuhlman, Economic mechanisms (Moscow: Progress, 1993)

[4] T. Yu. Prokofieva, “Correlation of the concepts "Economic mechanism" and "Organizational-economic mechanism"”, Bulletin of the Moscow University of Finance and Law num 1 (2017): 21-26.

The basic elements (levers) of the economic mechanism of the production system are – capital, costs, volume of production, price, value, demand[5]. This mechanism generates economic profit as a net income from the capital invested in the enterprise. At the same time, certain elements of the mechanism currently require revision in view of current trends in the development of economic reality.

Interest attaches to the consideration of the economic mechanism as a dynamic object driven by a set of interrelated elements[6]. However, insufficient attention is paid to the study of the principles of ensuring the development of the production system.

The organizational and economic mechanism for managing the production system consists of management tools, principles of production organization and control over the achievement of planned results[7]. In practice, promising and effective management approaches to key indicators, inventory, and transport costs have been insufficiently applied.

Studies of the organizational and economic mechanism of the development of the production system emphasize its holistic nature. The model of the mechanism of production development links organizational and economic forms and methods of influence on objects[8]. It is advisable to include parameters of the effectiveness of the economic mechanism in this model.

In the scientific literature, the concept of lean manufacturing, the introduction of lean technologies and the formation of Kaizen culture are considered in sufficient detail. In[9,10], the practical aspects of implementing lean manufacturing in terms of managing constraints and order completion times are considered. The process of applying lean technologies is often presented as a cycle of five steps aimed at optimizing the company's activities and jobs[11].

Lean manufacturing is one of the most popular paradigms for waste management in the manufacturing and service industries[12]. Scientists have considered particular cases of the economic mechanism of the production system, related to the management of costs and expenses[13]. However, the issue of identifying the potential for increasing production efficiency by identifying hidden costs requires further development.

---

[5] V. K. Kondrashova, “The economic mechanism of the enterprise. Proceedings of higher educational institutions”, Problems of Printing and Publishing num 4 (2002): 176.

[6] A. N. Bychkova, “Economic mechanism: definition, classification and application”, Omsk University Bulletin. Series "Economics" Vol: 4 (2010): 37-43.

[7] E. A. Semakhin, Methodology for creating product value when using a production system in mechanical engineering enterprises, In: Regional economy: problems and prospects: materials of the international scientific-practical conference (Vladimir, 2009), 331-334

[8] D. N. Dudarev, “Organizational and economic mechanism for the development of the production system”, Econominfo Vol: 5 (2006): 3-7.

[9] S. Mostafa; J. Dumrak y H. A. Soltan, “A framework for lean manufacturing implementation”, Production & Manufacturing Research Vol: 1 num 1 (2013): 44-64.

[10] L. Wilson, How to implement lean manufacturing (New York: McGraw-Hill, 2010), 45-197.

[11] G. Kuzin y A. Kulikov, Lean Manufacturing to Optimize Processes and Workplaces. 2015. Retrieved from: https://www.cfin.ru/management/controlling/lean_production_hr.shtml

[12] A. A. Thakur, “Review on Lean Manufacturing Implementation Techniques: A Conceptual Model of Lean Manufacturing Dimensions”, REST Journal on Emerging trends in Modelling and Manufacturing Vol: 2 num 3 (2016): 62-72

[13] T. V. Fedorova, “The economic mechanism of cost management and the calculation of production costs”, Scientific almanac Vol: 2-1 num 16 (2016): 358-362.

Most of the research focuses on one aspect of lean elements, only very few focus on more than one element of lean technologies[14]. But to successfully implement lean manufacturing, the organization had to focus on all aspects.

The concept of lean technologies is focused on minimizing waste, however, there is a growing awareness of the importance of ensuring sustainability, and the pillars of economic growth, environmental conservation, and social responsibility[15]. The goal-based management technology requires additional research.

Lean manufacturing practices and corporate environmental sustainability are becoming inextricably linked. Although there are common tools, the lack of effective decision-making tools to help implement lean technologies with an environmental sustainability aspect is noticeable[16]. In the goal-based management model, environmental sustainability indicators need to be further specified.

The scientific literature presents a performance measurement system for an economical production environment that evaluates the multidimensional performance of an economical production. The proposed model consists of three levels: the first level (General production indicators), the second level (criteria that represent the stakeholders ' view of production indicators), and the third level (sub-criteria for criteria that represent areas affected by lean manufacturing). The model links indicators that measure performance to areas that need improvement, according to their relative importance to stakeholders[17]. This system needs additional research in order to identify the parameters of the economic mechanism of the production system.

Each firm relies on a different combination of administrative and technological changes to reduce the number of losses[18]. It is advisable to develop an algorithm for determining the potential for increasing production efficiency by identifying losses.

Lean manufacturing has become one of the most popular production strategies and management styles for organizations around the world[19]. A gap in numerous studies and practical recommendations on planning, organization and control of the production system is the lack of emphasis on the key features and management aspects of the economic mechanism of lean technologies.

[14] A. Panwar, B. P. Nepal, R. Jain, A.P.S. Rathore, “On the adoption of lean manufacturing principles in process industries”, Production Planning & Control Vol: 26 num 7 (2015): 564-587.

[15] R. Henao; W. Sarache y I. Gómez, “Lean manufacturing and sustainable performance: Trends and future challenges”, Journal of cleaner production Vol: 208 (2019): 99-116.

[16] C. Bai; A. Satir y J. Sarkis, “Investing in lean manufacturing practices: an environmental and operational perspective”, International Journal of Production Research Vol: 57 num 4 (2019): 1037-1051.

[17] S. Perera y C. Perera, “Performance measurement system for a lean manufacturing setting”, Measuring Business Excellence Vol: 23 num 3 (2019): 240-252.

[18] A. Ghobadian; I. Talavera; A. Bhattacharya; V. Kumar; J. A. Garza-Reyes y N. O'regan, “Examining legitimatisation of additive manufacturing in the interplay between innovation, lean manufacturing and sustainability”, International Journal of Production Economics Vol: 219 (2020): 457-468.

[19] J. Antony; E. Psomas; J. A. Garza-Reyes y P. Hines, “Practical implications and future research agenda of lean manufacturing: a systematic literature review”, Production Planning & Control (2020): 1-37.

Limiting the productive use of lean technologies is due to the lack of methodological support for enterprises that want to develop their production systems. Methodological support should facilitate the systematic and step-by-step implementation of lean production tools, the identification of a set of suitable tools, taking into account the specifics of the enterprise and the industry in which it operates[20].

At enterprises that use lean technologies, production efficiency and labor productivity increase due to more modern methods of organizing and managing resources and processes[21]. The scientific theory does not sufficiently specify the sources of additional income and reserves from lean management.

Lean technologies are considered a means of influencing socio-technical systems of any complexity[22]. Scientists considered the multidimensional spheres of influence of the philosophy of lean production on many parameters of the company's activity. At the same time, no attention is paid to the elements of the company's economic mechanism.

In science and practice, the approaches of centralized and decentralized transition to the use of lean tools are considered, and attempts are made to find a more effective option[23]. More in-depth consideration should be given to the effects in the economic mechanism of the functioning of the production system.

The purpose and objectives of the study

The purpose of this work is to formalize the economic mechanism of production systems based on lean technologies, including:

- in determining the content of the economic mechanism of production systems;

– identification of key features of the economic mechanism of functioning of the production system based on lean technologies

– in a visual schematic representation of the management aspects of the economic mechanism of a production system that uses lean technologies;

- consideration of specific management methods in a production system based on the use of lean technologies;

[20] S. A. Kucheryavenko; S. A. Gayvoronskaya; D. A. Popov y I. V. Chistnikova, “Developing supply chain management and lean environment for improving the company performance”, International Journal of Supply Chain Management Vol: 8 num 4 (2019): 664-669.

[21] V. Wickramasinghe y G. L. D. Wickramasinghe, “Effects of HRM practices, lean production practices and lean duration on performance”, The International Journal of Human Resource Management Vol: 31 num 11 (2020): 1467-1512 y V. Wickramasinghe y G. L. D. Wickramasinghe, “Variable Pay and Job Performance of Shop-Floor Workers in Lean Production”, Journal of Manufacturing Technology Management Vol: 27 num 2 (2016): 287–311.

[22] M. Soliman; T. A. Saurin y M. J. Anzanello, “The Impacts of Lean Production on the Complexity of Socio-Technical Systems“, International Journal of Production Economics num 197 (2018): 342–357.

[23] R. Secchi y A. Camuffo, “Rolling out Lean Production Systems: A Knowledge-Based Perspective”, International Journal of Operations & Production Management Vol: 36 num 1 (2016): 61–85.

- formulation of technology for determining the potential for improving the efficiency of production (company) by reducing losses;

- identification of parameters of the economic mechanism of functioning of the production system based on the use of lean technologies.

Materials and methods of research of the economic mechanism of functioning of the production system based on the use of lean technologies

Features of the economic mechanism and cycle time in the production system

Based on the generalization of scientific theories, we can say that an economic mechanism is a sequence of actions and operations performed under certain conditions and principles, aimed at specific results.

The economic mechanism of functioning of a production system based on lean technologies is a specific process of production and economic activity, organized according to the following principles: orientation to consumer needs, balancing production, optimal placement of equipment taking into account the sequence of passing through it of materials and raw materials, exclusion of all types of losses, search for ways to improve efficiency.

These features of the lean production concept are very economical, do not require significant investments during implementation, and allow you to find hidden reserves for optimizing the company's activities and growth.

Let's consider the managerial aspects of the economic mechanism of functioning of the production system based on lean technologies (Fig. 1).

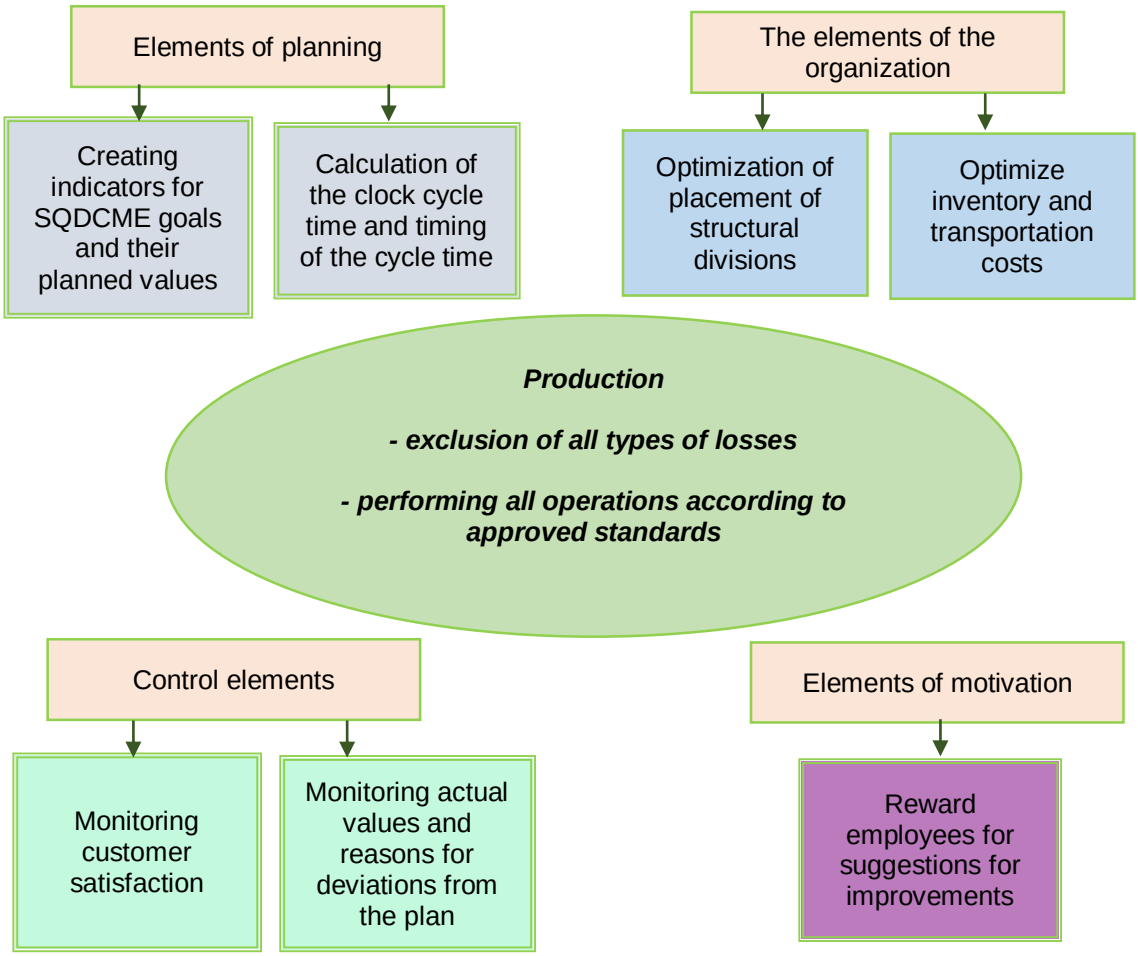


Figure 1
Managerial aspects of the economic mechanism of functioning of the production system based on lean technologies

As can be seen from figure 1, the key principles of the production process that ensure increased economic efficiency are the elimination (minimization) of losses, performing operations according to approved standards, and focusing on work on pre-orders of customers.

Stage of activity	Организация процесса в традиционной системе	Организация процесса в производственной системе, основанной на применении lean-технологий
1. Determination of the batch size of manufactured products	According to production capacity	According to the order volume
2. Establishing the quality characteristics of manufactured products	According to the company's practice	According to the customer's requirements (requests)
3. The nature of operational management	Management based on traditional approaches and methods	Operational management of a balanced set of goals
4. The rhythm of the production process	According to production capacity	Load balancing corresponding to the clock cycle time

5. Inventory management	Accumulation of a significant amount of inventory in the warehouse	Reduced inventory in the warehouse by 50% compared to the traditional norm

Table 1
Key features of the economic mechanism of functioning of the production system based on lean technologies

The cycle duration in a production system based on lean technologies is related to the calculated value – the Takt time.

First, the company calculates the Takt time as the time interval or frequency with which the customer wants to receive the ordered products.

The speed of production activity is determined according to the Takt time, exactly corresponding to the customer's requirements.

The Takt time is calculated using the formula:

$$T = t / v, \quad (1)$$

t – the entire production time (for example, one shift)

v – the speed at which the consumer demands to receive the product.

To meet the customer's request for order completion time, you must coordinate the production cycle in the clock cycle time. If there are deviations in the cycle length and clock time, it is advisable to change the load of workers in order to balance production.

For lean technologies, the optimal production process is considered to be a flow of manufacturing of individual products, with the movement of products from shop to shop (operator to operator) without delays and accumulation. This organizational mechanism of the production system contributes to improving the quality of manufactured products.

Specific management methods in the production system based on the use of lean technologies

Lean technologies are based on the concept of visual management and ubiquitous visualization. At the same time, the most important information is clearly indicated on stands, screens, placards, signs, in storage areas in free access for every employee at any level.

In the context of management, visualization involves a systematic representation of key indicators of a firm's performance, their planned and actual values. Regular monitoring is used to coordinate and monitor the achievement of the company's goals.

The system of lean technologies uses the target complex model of SQDCME management, which includes the following directions: "S – safety, Q-quality, D-order execution, C-costs, M-corporate culture, E-ecology" [19]. To manage the production system, indicators are determined for each direction at the enterprise, their planned values are set, actual values are fixed, and the reasons for deviations of the achieved values from the planned ones are identified. An example of the SQDCME goal model metrics is shown in table 2.

Goals	Indicators
S (safety)	- product safety - number of accidents - traumatism
Q (quality)	- product quality level - quality of services provided - percentage of marriage
D (order execution)	- the volume of completed orders - timely execution of orders - planned order indicators
C (costs)	- material costs - identified losses - time costs
M (corporate culture)	- level of customer service culture - employees ' commitment to the company's values - involvement of personnel in the event
E (ecology)	- the state of the environment in the organization - environmental friendliness of products - amount of polluting emissions

Table 2
Example of SQDCME management model indicators

Thus, the indicators of the SQDCME management model allow you to identify the result of achieving the goals of the activity in the monitoring mode. Lean management technologies provide for the creation of a flexible and dynamically changing production system that adapts well to demand. The lean philosophy implies optimizing the placement of structural divisions, so that the interacting workshops are located in close proximity to each other, and the equipment is installed in the form of the letter "U" for the convenience of the employee moving during operations.

Special attention is paid to inventory and warehouse management tools.

Lean approaches in warehouse management include:

- expanding end-to-end deliveries that help reduce costs;

- optimization of visualization of storage locations, routing of workers and equipment, automation of warehouse operation by product positions, which reduces staff errors;

- alignment of product flows for the rhythmical operation of the warehouse;

- the optimal number of staff;

- reducing inventory levels allows to avoid losses and illiquid assets.

Technology for determining the potential for improving the efficiency of production (company) by reducing losses

In lean manufacturing, the company uses a unique expanded list of resources spent, which is commonly referred to as losses, to manage its expenses. These hidden losses "increase production costs without adding to the consumer value of the product"[11]. Due to losses in processes, their efficiency may decrease by 70-80 %.

Losses in the lean concept include "all actions that consume resources but do not create value for the customer". Eliminating losses is a huge resource for improving efficiency.

The classification of the seven most important types of losses was formulated by Taiichi Ono, the future Chairman of the Board of Directors of Toyota, while still working as the head of the machine shop[14].

Losses in a production system based on lean technologies include: "overproduction, excess inventory, unnecessary transportation, excessive processing, unnecessary movement, alteration or marriage, waiting"[9].

Identification of the potential for improving the efficiency of production (company) should be carried out in the context of types of losses. At the same time, it is necessary to diagnose the activity of the production system for the presence of signs of losses.

Signs of losses in the form of overproduction include:

- excessive document flow between the company's divisions and a large number of internal reports;

- no shift tasks or schedules for monitoring the implementation of the plan;

- product output does not meet the production schedule;

- existence of unsatisfied demand for individual inventory items;

- the production of defective products;

- the occurrence of failures in work of equipment;

- periodic occurrence a large proportion of manual labor when performing operations;

- the availability of machines with excess capacity;

- output per shift less than 20% of the total product range;

- sequential execution of operations where parallel execution is possible;

- the lack of relationship with the following process.

Signs of losses in the form of excess inventory are:

- storage of materials in unspecified volumes;

- location of inventory in aisles;

- accumulation of work in progress near the place where individual operations are performed;

- excess of the quantity of basic raw materials and replacement production needs;

- it takes more than 1 minute to search for materials to work with;

- there are several types of materials in the shop, and employees decide which work to do first.

Signs of losses in the form of unnecessary transportation include:

- the batch of products is moved on different types of transport;

- successive product processing processes are carried out in different rooms;

- transportation with the use of manual labor;

- long distances between the places of loading and unloading;

- accumulation of inventory between processes because of the lack of periodicity transportation;

- transport corridors or highways are not defined or marked.

Signs of losses in the form of excessive processing are considered:

- the presence of operations or processes that are not critical to the manufacture of a particular product;

- the presence of unnecessary operations;

- the process can be replaced with a more efficient process;

- part of the process or operation can be shortened without compromising the quality of the product;

- re-processing due to lack of tools, low-quality raw materials, materials, packaging;

- additional actions due to ineffective communication between employees or departments.

Losses in the form of extra movements occur if:

- the employee takes extra steps, turns, bends, and hand movements;

- work is done with only one hand;

- loss of time when installing and removing the workpiece;

- there is no documented standard for performing the operation.

Losses in the form of alteration or marriage occur if there are:

- product defects due to poor quality raw materials, materials, packaging;

- defective due to worker errors;

- defective due to equipment failure;

- insufficient processing of the workpiece or part;

- there is no or no plan for evaluating and correcting defects;

- the absence of the project of manufacture of works on prevention of hardware failures;

- there is no "smart automation", no devices that automatically prevent errors.

Signs of losses in the form of expectations include:

- downtime as a result of uncoordinated processes;

- downtime due to delayed delivery of raw materials, materials, packaging, containers;

- failure to follow standard procedures.

Discussion of the results of the economic mechanism of functioning of the production system based on the use of lean technologies

In lean manufacturing, innovative methods and techniques for organizing processes are used, with the driving force being the personnel. The economic mechanism of lean technologies is focused on activating the underutilized potential of labor resources. The company's success is achieved through the creation of benefits by employees of the enterprise, the equipment is a means of achieving the company's goals.

Implementation of lean manufacturing principles begins with training of personnel, implementation of the philosophy of continuous, continuous improvement of the Corporation's activities in order to increase the value for the client. The introduction of the lean manufacturing philosophy can start with a separate shop and extend the experience to all enterprises.

The nature of the application of lean technologies will depend on the context of the company (for example, its size, scope of activities, customers, supply chains, internal factors), the diversity of the management system and the external environment of the company's sector (for example, the country in which the company operates)[2].

Managers should make long-term planning when implementing lean manufacturing and should not overestimate significant short-term performance improvements. Enterprises should pay attention to R & d when implementing lean manufacturing[24].

A production system based on lean technologies is never static. When you identify areas for improvement, the process is quickly adjusted to new opportunities. The company's

[24] X. Zhu y Y. Lin, “Does Lean Manufacturing Improve Firm Value?”, Journal of Manufacturing Technology Management Vol: 28 num 4 (2017): 422–437.

personnel may be allowed to violate internal regulations and work algorithms, change them if this will lead to improvements in the system, provided that the requirements for safety and product quality are met.

Many of the company's problems are usually solved in their place of origin. In other words, lean technologies provide for managers to go to production departments, sites, and divisions to find the cause of the problem.

The economic mechanism of functioning of the production system based on lean technologies is focused on the optimality of the production system, which excludes unproductive operations and costs, such as:

- delays in processing documents;

- waiting for the necessary raw materials, materials, finished products;

- excess inventory, excess process or storage space;

- extra transport costs due to irrational placement of sections and zones;

- human error.

It can be argued that the use of lean technologies provides the company with additional income and reserves to increase them at a low level of expenses incurred. The specification of these parameters of the economic mechanism of the production system is presented in table 3.

Additional expenses	Additional income	Additional reserves
Expenses for launching lean tools	Increasing income by reducing marriage	Using the intellectual and creative potential of employees
Expenses for material incentives for employees who have made suggestions for improvement	Additional income by eliminating excessive processing increased productivity	By reducing downtime and processes
Visual design costs	Reduce internal damage by reducing inventory	Eliminate unnecessary operations
The cost of marking	The reduction of transportation costs	Increase efficiency through rational placement of inventory and equipment
Expenses for purchasing additional equipment	Revenue from additional orders	Cost reduction through the use of a loss protection system

Table 3
Parameters of the economic mechanism of functioning of the production system based on the use of lean technologies

As can be seen from the key parameters of the economic mechanism of the production system, the lean concept is aimed at identifying the sources of development and stability of the company's work.

The positive economic effect of these technologies in practice occurs in particular through:

- optimal coordination of interaction between technological and production services;

- a clear understanding of production priorities for the working day (shift);

- procedures for operational control of production safety, quality of products and services;

- reducing the time for the meeting.

Conclusions

The economic mechanism of functioning of the production system based on the use of lean technologies is responsible for increasing revenues and additional reserves at low material costs by rationalizing and optimizing the processes and organizational structure of the company.

The economic mechanism of the production system determines its structure and order of operation.

The use of lean technologies can be considered a promising approach to managing organizations in various fields and industries.

Special features of the production system based on lean technologies are: visualization of instructions, standards, storage locations and visual management, solving problems from the place of origin, eliminating unproductive expenses and losses, forming a lean culture and thinking among the members of the labor team, maintaining cleanliness and cleanliness in the workplace, U-shaped placement of equipment, product quality control.

Specific features of the operating procedure of a production system based on lean technologies include working on pre-orders, balancing production, focusing on the time and desires of consumers, performing work operations according to the standard, continuous improvement of procedures, processes, and workplaces.

Production or logistics based on lean technologies can cause a huge increase in labor productivity and production volumes. Lean technologies should become the main production system in many sectors of the world economy.

The results lead to the conclusion that there are still gaps in knowledge, and contribute to the identification of research areas available for future research.

References

Abdallah, A. B.; Dahiyat, S. E. y Matsui, Y. “Lean Management and Innovation Performance: Evidence from International Manufacturing Companies”. Management Research Review Vol: 42 num 2 (2019): 239–262.

Antony, J.; Psomas, E.; Garza-Reyes, J. A. y Hines, P. “Practical implications and future research agenda of lean manufacturing: a systematic literature review”. Production Planning & Control (2020): 1-37.

Bai, C.; Satir, A. y Sarkis, J. “Investing in lean manufacturing practices: an environmental and operational perspective”. International Journal of Production Research Vol: 57 num 4 (2019): 1037-1051.

Bychkova, A. N. “Economic mechanism: definition, classification and application. Omsk University Bulletin”. Series "Economics" Vol: 4 (2010): 37-43.

Dudarev, D. N. “Organizational and economic mechanism for the development of the production system”. Econominfo Vol: 5 (2006): 3-7.

Fedorova, T. V. “The economic mechanism of cost management and the calculation of production costs”. Scientific almanac Vol: 2-1 num 16 (2016): 358-362.

Ghobadian, A.; Talavera, I.; Bhattacharya, A.; Kumar, V.; Garza-Reyes, J. A. y O'regan, N. “Examining legitimatisation of additive manufacturing in the interplay between innovation, lean manufacturing and sustainability”. International Journal of Production Economics Vol: 219 (2020): 457-468.

Henao, R.; Sarache, W. y Gómez, I. “Lean manufacturing and sustainable performance: Trends and future challenges”. Journal of cleaner production Vol: 208 (2019): 99-116.

Kondrashova, V. K. “The economic mechanism of the enterprise. Proceedings of higher educational institutions”. Problems of Printing and Publishing num 4 (2002): 176.

Kucheryavenko, S. A.; Gayvoronskaya, S. A.; Popov, D. A. y Chistnikova, I. V. “Developing supply chain management and lean environment for improving the company performance”. International Journal of Supply Chain Management Vol: 8 num 4 (2019): 664-669.

Kuhlman, A. Economic mechanisms. Moscow: Progress. 1993.

Kuzin, G. y Kulikov, A. Lean Manufacturing to Optimize Processes and Workplaces. 2015. Retrieved from: https://www.cfin.ru/management/controlling/lean_production_hr.shtml

Mostafa, S.; Dumrak, J. y Soltan, H. A. “A framework for lean manufacturing implementation”. Production & Manufacturing Research Vol: 1 num 1 (2013): 44-64.

Panwar, A.; Nepal, B. P.; Jain, R. y Rathore, A. P. S. “On the adoption of lean manufacturing principles in process industries”. Production Planning & Control Vol: 26 num 7 (2015): 564-587.

Perera, S. y Perera, C. “Performance measurement system for a lean manufacturing setting”. Measuring Business Excellence Vol: 23 num 3 (2019): 240-252.

Prokofieva, T. Yu. “Correlation of the concepts "Economic mechanism" and "Organizational-economic mechanism". Bulletin of the Moscow University of Finance and Law num 1 (2017): 21-26.

Secchi, R. y Camuffo, A. “Rolling out Lean Production Systems: A Knowledge-Based Perspective”. International Journal of Operations & Production Management Vol: 36 num 1 (2016): 61–85.

Semakhin, E. A. Methodology for creating product value when using a production system in mechanical engineering enterprises, In: Regional economy: problems and prospects: materials of the international scientific-practical conference. Vladimir. 2009.

Soliman, M.; Saurin, T. A. y Anzanello, M. J. “The Impacts of Lean Production on the Complexity of Socio-Technical Systems”. International Journal of Production Economics num 197 (2018): 342–357.

Thakur, A. A. “Review on Lean Manufacturing Implementation Techniques: A Conceptual Model of Lean Manufacturing Dimensions”. REST Journal on Emerging trends in Modelling and Manufacturing Vol: 2 num 3 (2016): 62-72.

Tillema, S. y Steen, M. “Co-Existing Concepts of Management Control. The Containment of Tensions Due to the Implementation of Lean Production”. Management Accounting Research num 27 (2015): 67–83.

Wickramasinghe, V. y Wickramasinghe, G. L. D. “Effects of HRM practices, lean production practices and lean duration on performance”. The International Journal of Human Resource Management Vol: 31 num 11 (2020): 1467-1512.

Wickramasinghe, V. y Wickramasinghe, G. L. D. “Variable Pay and Job Performance of Shop-Floor Workers in Lean Production”. Journal of Manufacturing Technology Management Vol: 27 num 2 (2016): 287–311.

Wilson, L. How to implement lean manufacturing. New York: McGraw-Hill. 2010.

Zhu, X. y Lin, Y. “Does Lean Manufacturing Improve Firm Value?”. Journal of Manufacturing Technology Management Vol: 28 num 4 (2017): 422–437.

REVISTA INCLUSIONES M.R.
REVISTA DE HUMANIDADES Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA EDITORIAL