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IMPROVING CORPORATE MANAGEMENT USING THE LEAN CONCEPT: INTEGRATION AND OPTIMIZATION OF BUSINESS PROCESSES

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Abstract

The relevance of research on the LEAN concept is determined by the need for organisations to constantly adapt in the modern competitive environment, optimise business processes and use resources efficiently, which is becoming an important condition for maintaining competitiveness and meeting market requirements. The purpose of the article is to analyse the possibilities and formulate proposals for integration and optimisation of business processes at Ukrainian enterprises using the LEAN concept. For this purpose, the task was set to analyse the essence of the concept, study the current state of domestic companies in the context of lean production, and propose a plan for integrating the LEAN concept into the company's activities. Methods of analysis and synthesis, deduction and induction, analogy, argumentation, graphic methods were used.

The article analyses the LEAN concept, focusing on its principles and methodology and their application to optimise business processes and improve the efficiency of enterprises. Evaluated the importance and benefits of implementing the concept of lean manufacturing at enterprises in the context of modern competition. Based on the analysis developed specific advice on the integration of the LEAN concept into the business processes of Fort Post LLC. The aim of the proposed plan is to facilitate the implementation of LEAN with maximum efficiency and minimise possible difficulties for the company.

Keywords

LEAN concept, lean manufacturing, business processes, corporate management, strategic management.

Problem statement

In today's competitive market environment, businesses must constantly optimise their operations to achieve a high level of efficiency and competitiveness. One of the key improvement strategies is the implementation of the LEAN concept aimed at efficient management of business processes and optimisation of resource use.

However, the implementation of the LEAN concept encounters some difficulties and challenges. Among them are the unconsciousness of staff about the basic principles of LEAN, lack of readiness of organisational structures for change, inefficient integration of LEAN into the existing corporate culture, and the lack of a proper management approach to implementing the concept.

Therefore, there is a relevant need to research and develop strategies for the successful implementation of the LEAN concept in enterprises of various industries, taking into account the above problems and ways to overcome them.

The urgency of the chosen topic

Integration and optimisation of business processes in today's business environment is extremely important for several reasons. In a world of intense competitive pressure, organisations must constantly change and improve to stay competitive. LEAN makes it possible to achieve this through effective process optimisation. Ensuring maximum efficiency and optimising the use of resources (time, money, employees) are critical tasks for any organisation. LEAN enables efficient organisation and use of these resources.

To summarise, improving corporate governance using the LEAN concept is a topical task, as it allows organisations to optimise their business processes, increase resource efficiency, and adapt more quickly to changes in the competitive environment and customer requirements.

Analysis of the latest research and publications

One of the effective and well-known management methodologies is the LEAN management concept aimed at optimising the functioning of production enterprises and eliminating all possible losses. LEAN management takes into account the involvement of each employee in business optimisation and is targeted at meet the needs of consumers. This approach was first described by J. Krafcik back in the 1980s. Subsequently, theoretical aspects and a methodology for implementing the concept of lean manufacturing at enterprises were developed. For example, J.P. Womack and D.T. Jones describe in detail the main approaches to implementing lean manufacturing, including methods, tools and key principles of this management concept. Ukrainian scientists such as O. Denysiuk, O. Skliarenko, N. Vasylchenko, O. Ryzhenko and others have also studied the implementation of the lean production concept, its tools and methods.

The purpose and objectives

The purpose of this study is to analyse the possibility and formulate proposals for the integration and optimisation of business processes at Ukrainian enterprises using the LEAN concept.

To achieve the research purpose, the following tasks have been set:

- analysis of the LEAN concept;
- study of the current state of domestic organisations;
- planning the integration of the LEAN concept into practical activities.

Presentation of the main material of the study and the obtained results

The LEAN concept is an innovative approach to the organisation of business and management systems aimed at achieving maximum efficiency, ensuring high product quality and meet the needs of customers.

The enterprise management system is a set of tools that includes planning, implementation, formulation of policies, practices, management of processes and procedures used in the development, implementation and execution of business plans and strategies, as well as all related management activities.

The model of the management system is as follows (Figure 1):

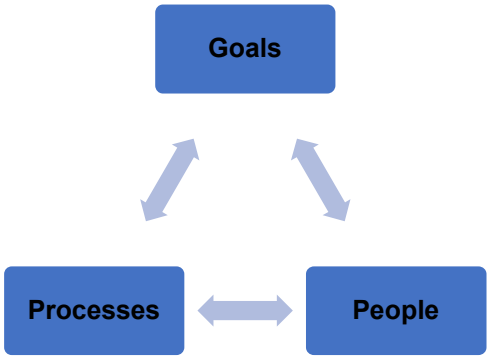

Figure 1. Model of the management system
Source: (Materials from Hochschule Mittweida)

The Goals section defines the company's long-term development strategy (where are we coming from?). Reflects the current state of the business and the desired result (where do we plan to go?). If the goals of the employees and the company are the same, it encourages them to work effectively together to achieve these goals. If the goals are unknown to employees, their performance decreases. If goals are not clearly defined, this can lead to premature process optimisation.

The Processes section defines the actions that need to be taken to achieve the goals. It addresses the questions: what exactly needs to be done to achieve the goals and how to solve the tasks.

The People section focuses on the main aspect, and more specifically, who is able to move towards the company's common goals. It considers what joint processes and efforts can help employees achieve their goals.

The business system has the key elements shown in Figure 2.

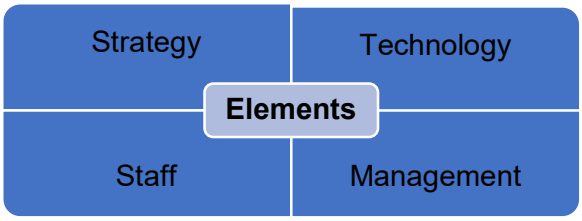

Figure 2. Key elements of a business system
Source: (Materials from Hochschule Mittweida)

Strategy should be the basis for creating a business system, not the other way round. Attempting to build a business system on the basis of inefficient business processes leads to failure. A strategy is a well-grounded programme for organising a business in the context of four main areas: competitive advantage, organisational transformation, financial optimisation and operational improvement. Technologies include various methods and processes for achieving a certain result in a defined field of the system's activity. It is essential that technologies transform available resources into desired results. When developing technologies, external and internal factors and available resources must be taken into account and adjustments made to achieve maximum efficiency. Staff is a key factor in the implementation of business system technologies. It is important to select the right staff and provide the necessary training. Management must ensure that the technology is functioning properly at the business system level (Seliverstova & Losovskaya, 2019)

Moving on to the discussion of the LEAN concept, it comes down to an important aspect of management, and more specifically, the optimisation of business processes. LEAN provides unique tools and methods aimed at ensuring the highest level of efficiency in all areas of the enterprise.

Going deeper, the LEAN concept is based on the important principles of optimising productivity and quality, reducing costs and using resources efficiently. This is reflected in the detailed analysis and improvement of every step of the production process, as well as the management of material and information flows.

An important aspect of the LEAN concept is underlining the role of each employee in the organisation. All employees play an important role in achieving a common goal, and more specifically, the best possible result for the customer and the company. LEAN provides tools for engaging and motivating staff, creating a dynamic and productive team atmosphere.

The concept of Lean Production originated at Toyota and is based on reducing production cycle times by eliminating losses. Lean Production involves every employee in optimising business processes and maximising market orientation.

The concept of Lean Production began to take shape in the 1950s under the leadership of Taiichi Ono as one of the components of production optimisation within the JIT concept. At that time, Japan was experiencing the consequences of the war but needed new cars. However, the demand for cars was not so great as to fully utilise production capacity, unlike Ford. Therefore, the Japanese had to create different car models in the environment of low demand for each model and learn how to work efficiently. This was an important task, as efficiency was considered in terms of mass production (A Brief History of Lean, n.d.)

The main goals of Lean Production in the field of logistics include:

- reduced labour costs by almost half;
- reduced production and warehouse space;
- reduced development time for new products;
- provide reliable supply of products to customers;
- achievement of the highest quality at the lowest cost.
- Key aspects of achieving logistics goals using this concept include (Perlyt, 2019):
- reduced the time required to prepare and complete the process;
- minimum production cycle time;
- quality control at all stages of the production process;
- optimisation of overall performance;
- cooperation with reliable suppliers;
- continuous availability of technical equipment and high quality of its maintenance and repair;

- adequate training of middle and lower-level staff;
- establishing partnerships with reliable suppliers.

It should be noted that the main principle of this concept is the rational and optimal use of potential of employees. The staff and the entire team must adhere to the basic principles of Lean Production in their work. This concept provides effective approaches to ensure that an enterprise can maintain its global competitiveness by creating comfortable working conditions for its staff and continuously improving their skills, as well as ensuring safe and high-quality working conditions.

The basic principle of Lean Production is fast, efficient and high-quality satisfaction of customer needs. Comparing the traditional and lean production models in terms of costs and profit, the philosophy of both systems can be presented as follows (Lean management, 2021):

- traditional system: costs + profit = price;
- LP: price - costs = profit. People are the most valuable resource.

The benefits of applying this concept include:

- decline in inventory levels (no warehouses, minimal stock on the shelves, all stock at workplaces);
- cooperation with reliable suppliers;
- reduction of logistics costs and production cycle time by eliminating unnecessary operations (warehousing, waiting in the production cycle).
- The disadvantages of this system include:
- the need for highly qualified logistics managers;
- significant dependence of the company's business continuity on the reliability of suppliers.

The tools of the Lean manufacturing concept include the following methods (Veres, 2020, p.235; Ryzhenko, 2022, p.62-63):

- 5S system is organising the workspace, maintaining order, keeping it clean, setting standards and continuous improvement;
- Kaizen is a method of continuous improvement and process optimisation;
- Asaichi is a system based on daily meetings to manage all aspects of the enterprise;
- PDCA is a method aimed at identifying the root cause of a problem and developing a strategy to eliminate it;
- Standardised work is a method for identifying and consolidating best practices for operations for stable processes and quality results;
- SMED is a method of quick changeover and re-equipment of equipment in less than 10 minutes;
- Kanban is a system for controlling the supply chain in production, but not an inventory service;
- TPM is the general maintenance of equipment and processes.

Just-in-time method (JIT) is one of the key elements of the LEAN concept and plays a significant role in improving the business processes of organisations. This method is aimed at optimising the production process and inventory management.

The main idea of the JIT method is to have the right resources, components and materials in the right quantity, quality and compliance with standards, ensuring that these needs are met at the right time, and in no case earlier. This means that the company receives the necessary resources without excessive inventory, which avoids cost overruns and unnecessary freezing of capital.

Thus, the concept of lean manufacturing (LP) points to the need to apply innovative production methods and systems, moving away from traditional mass production. This new system promotes better information sharing, teamwork and more efficient use of raw materials, which in turn contributes to the development of logistics, in particular, recycling logistics. However, the main criterion that unites all these aspects is continuous improvement in all stages of the production process. This improvement can be compared to immunity, as mistakes made are no longer repeated, which gives this system its unique character. In other words, this is not just a new approach to production management, but a real fundamental transformation of economic paradigms and production.

There are two approaches to implementing lean manufacturing. The first is to use a set of tools, such as 5S, Kanban, Poka-yoke, Value stream mapping, Total productive maintenance, Gemba, Production flow analysis, JIT, and others. These tools can compete with each other in practical application. The second approach is known as the Toyota Way. This method is based on improving the production flow and smoothness of work, with efficiency achieved through the proper functioning of the entire system, rather than by cutting costs.

Enterprises can choose one of these approaches. The first approach involves trying to achieve improvements by changing certain parts of the process without transforming the entire system. The second approach, which involves fundamental changes to the system, can be costly, as it requires the exchange of

scientific and technical knowledge, engineering, the purchase or re-engineering of machinery and equipment, product quality improvements and reorganisation of the enterprise.

It is important to note that using only the first approach will not bring the desired results, as introducing individual methods without transforming the entire system can cause disruption. For example, a manager may decide to use the 5S methodology but not have a plan or performance measure for sorting, tidiness, cleanliness, standardisation and workplace improvement.

Another, more optimal, approach takes into account investing for the long term and using the philosophy of long-term development. In the context of political instability, military conflicts, constant changes in legislation and its non-enforcement, an entrepreneur may consider it inappropriate to use Japanese methods. Table 1 shows the differences between the two accounting systems.

Table 1 – Comparison of traditional and lean accounting

Indicator	Cost-effective accounting	Traditional accounting
Production/ Precision inventory control	Kanban is an inventory management system that is based on accurate signals of inventory consumption in production. It helps to avoid overproduction and stock-outs by determining the exact quantities to be produced or ordered.	A work order is a document that contains information about the tasks and scope of work to be performed in production. In the context of inventory accounting, this can indicate the need for specific materials.
	Visual cues are the use of specific markers, labels, or signals that provide information about stock levels, replenishment needs, etc. This helps to respond quickly to changes and avoid overstocking.	Production tracking is monitoring and controlling the production process, including material consumption and production of finished products. Allows you to determine how much material was used and how this affects inventory levels.
	5S is a methodology that includes sorting, systematising, cleaning, standardising and self-discipline in the workplace. It helps to optimise workspace and arrange inventory in a way that makes it easier to account for and manage.	Cyclic inventory is a periodic check and assessment of the actual inventory on hand to identify possible differences between the actual and recorded inventory quantities.
Approximation	Key suppliers are an important component of lean inventory management, as working with key reliable suppliers helps to ensure the consistency of supply and quality of materials.	Approval of a purchase order involves agreeing on the quantity and characteristics of the goods to be purchased. However, this approach may be less efficient than framework orders.
	Framework orders are defined in advance as the volume and characteristics of goods to be purchased within a certain framework. This allows you to ensure that you have the right stock without overstocking.	The three-way matching in accounts payable is a component that involves checking accounts payable in three aspects: internal order approval, actual deliveries and the invoice. This is to ensure that payments are accurate and in line with the invoice.
	Supplier certification is a component that involves assessing and confirming the competence and reliability of suppliers.	

Quality indicator	Standardised work is the use of standards and norms to define efficient ways of performing tasks. Standardised work simplifies processes and allows for effective control over production.	Thorough reviews are the evaluation of processes and products to ensure compliance with established standards and identify possible improvements. Thorough reviews may include analysing production processes, checking quality and efficiency.
	Unit flow production is an approach to manufacturing in which production processes are organised to produce products or services without interruption and with minimal delays. It helps to increase productivity and efficiency.	Residual materials are materials that remain after the production process and are not included in the final product. Accounting for residual materials is important for effective inventory management and cost optimisation.
Monitoring of production costs	Root cause analysis is the process of identifying the root causes of problems or costs in a production process. By identifying the root causes, effective strategies can be developed to optimise and reduce costs.	Typical costs are costs that can be classified or categorised according to various parameters, such as functional area, production volume, product lines, etc. Knowing the typical costs allows you to manage costs and calculate budgets.
	Cost factors and indicators of value stream elements - these factors and indicators allow you to estimate the cost of value stream elements and their impact on the total cost of products. Understanding these aspects allows you to effectively manage and reduce costs.	Variance analysis is the process of comparing actual costs to planned or standard costs and identifying differences. Variance analysis helps to identify anomalies and make corrections in the production process.
		Discrepancy reports are documents that reflect the results of the analysis of discrepancies between actual and planned costs. They provide information for management decisions and implementation of improvements in production processes.

Source: compiled by the author on the basis of (Nebrat, 2023; Denysiuk & Sannikova, 2022)

Despite these differences and the complexities of applying the principles of lean manufacturing, the world's leading companies: "Toyota Motor Corporation, Ford Motor Company, Herman Miller, Lockheed Martin prefer this approach. This can be seen in the successful implementation of lean manufacturing principles outside Japan, for example, at Lantech.

The state of implementation of the lean manufacturing concept (LEAN) in Ukrainian enterprises shows the gradual development of this approach and the interest in it in recent years. Global experience confirms the effectiveness of LEAN in various industries and its ability to optimise business processes aimed at meeting customer needs and reducing costs.

In Ukraine, the implementation of the LEAN concept is being driven, in particular, by foreign companies that are adopting this approach in their production systems. This applies to the automotive sector, where the number of companies using LEAN to improve productivity and efficiency is growing.

An example of successful implementation of the LEAN concept is Modern-Expo Group, which has achieved impressive results in the first five years of implementation. A significant increase in productivity, reduction of production space and waste, Lead Time and other indicators achieved demonstrate the success and prospects of using the LEAN concept at Ukrainian enterprises (Kolisnyk, n.d.).

Compared to upgrading equipment or launching a new production facility to upgrade an enterprise, lean production is a more cost-effective way to do things. It is important that when implementing lean production, a company should find a competent specialist, as the effectiveness of the method depends on it, and it is also imperative to introduce this approach to employees. For domestic businesses, the difficulty lies in the limited number of specialists who can properly implement Japanese methods at Ukrainian enterprises. There is also the possibility of resistance to innovation among the staff, including managers. In this case, it may even be necessary to terminate cooperation with employees who are not ready to adapt and accept changes. In such a situation, the company will incur unwanted financial costs associated with dismissal and severance payments.

Thus, it is obvious that the complexity of implementing a lean production system is not mainly due to the costs of its implementation, but rather depends on the human factor.

However, another situation is possible. For example, it is difficult for INTERPIPE company to apply the just-in-time principle in its production due to a shortage of raw materials - scrap metal, which is the main component for the manufacture of their products: pipes and wheels for railway transport. In this regard, they purchase steel raw materials in advance and in large quantities to hedge against rising prices on the national market. The situation is similar for finished products exported to the markets of Europe, the CIS, North and South America, the Middle East and North Africa. As the terms of delivery may vary (timing, delivery in batches), it is a strategic necessity to have sufficient storage space.

To illustrate the importance of implementing the LEAN concept, consider the Fort-Post Construction Company, which is one of the first private organisations to invest heavily in the construction of a brand new modern residential space in Kharkiv. The company has a positive reputation and is trusted and respected by local investors (Fort-Post Budivelna kompaniia, n.d.). Today, this company is a leader in Kharkiv in the field of residential and commercial real estate. Construction is carried out according to modern individual projects, using new technologies that provide a completely new level of quality. This guarantees a stable demand for the property offered.

The introduction of the concept of lean manufacturing would ideally address a number of key issues that most businesses face on a daily basis (Figure 3).

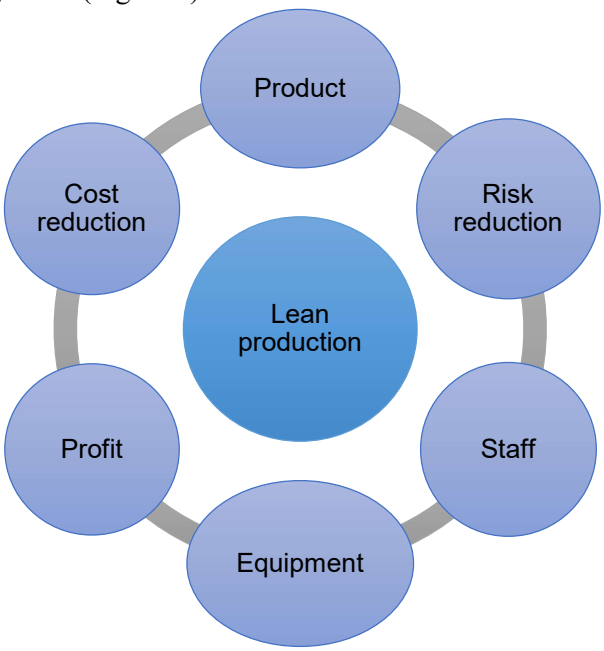

Figure 3. Key issues faced by most businesses on a daily basis
Source: (Materials from Hochschule Mittweida)

It is worth noting that effective corporate governance, including the implementation of the LEAN concept, interacts with strategic management, ensuring complementarity and optimisation of business processes. In the context of modern business, strategic management is an important tool for achieving success and sustainable development, which determines the long-term ability of an enterprise to adapt to changes in society and market conditions. It involves defining long-term goals and ways to achieve them, taking into account resources, the competitive environment, market conditions, etc.

Thus, the integration of the LEAN concept into Fort-Post's corporate governance will not only ensure the optimisation of business processes, but will also be in line with the strategic focus on manufacturing quality products and achieving market leadership.

As part of strategic management and analysis of the macro-environmental factors of an enterprise, PEST analysis is an important tool. PEST analysis includes an assessment of the impact of four main groups of factors on the company's operations: political, economic, sociocultural and technological. Table 2 provides an analysis of the factors of the enterprise's macro environment.

Table 2 – PEST-analysis of the enterprise

Policy	**Economy**
Government strategy on entrepreneurship	Socio-economic level of the population
Competition regulation	Rising consumer prices
Tax policy	Economic costs
Licensing of goods and services	Solvency of the population
	Increase in the cost of goods from suppliers
	Coronavirus pandemic
	Full-scale invasion of the Russian Federation
Society	**Technology**
Population trends	Emergent construction
Decline in real incomes	Wide use of automated tools
Population movement	Innovative approaches to service delivery
Modification of lifestyle and standard of living	Innovative processing of building materials
The role of the media	

Source: compiled by the author on the basis o f (Vasylchenko, 2023)

Thus, the overall impact of the economic environment on the operation of the enterprise is negative. Economic factors have the most negative impact. High inflation and declining household incomes affect the purchasing power of consumers and, consequently, their spending.

In second place in terms of influence are social aspects. Migration of people to economically developed areas leads not only to a decrease in the number of people, but also to a change in their social status. This leads to a decrease in the level of consumers' income and their cultural level. Political factors rank third in terms of influence. All attempts by the government to regulate the market lead to restrictions on the activities of retailers, an increase in production costs and, consequently, a decrease in trade profitability and profits. The pandemic has led to a sharp decline or change in demand for many goods and services. This poses a challenge for production, as LEAN methods are built on a production system that is precisely aligned with market needs. LEAN production processes need to be adapted to changes in demand and production volumes (Skliarenko, 2020). However, the most urgent and important problem for Ukraine today is the full-scale invasion of the Russian Federation. The situation of martial law is characterised by uncertainty, extraordinary circumstances and danger. This complicates the planning and development of standards, which are the basis of the LEAN concept. In wartime, resources are usually limited, including finances, personnel and time. Implementing LEAN requires a significant investment in training and optimisation processes, but this can be difficult to achieve in a military conflict.

In a situation where the macroeconomic environment reveals a negative impact on the company's operations, it is important to take effective measures to optimise and improve the efficiency of business processes. In this context, the implementation of the LEAN concept can be an excellent strategic step to optimise operations and increase the company's competitiveness. Here are some aspects of the need to implement the LEAN concept:

- The LEAN concept is aimed at optimising the use of resources, including human, material and financial. This is especially important in the context of shrinking sales markets and declining incomes;
- LEAN aims to eliminate any redundant operations and processes that do not add value to the customer. This can be particularly effective in reducing the negative impact of a downturn in household incomes;
- LEAN aims to improve the quality of products and services by eliminating defects and redundant steps in production processes. This can improve the perception of products and services by a declining population;
- The LEAN concept allows you to quickly adapt to changes in the competitive environment, including increased competition. Rapid and flexible change can help maintain competitive advantage;
- Implementing the LEAN concept can improve working conditions and processes by enabling new practices and efficient ways of working. This will have an impact on staff morale and productivity.

Given the negative impact of the macroeconomic environment on the enterprise, the LEAN concept can help ensure sustainability and efficiency in optimising business processes, provide a competitive advantage and support in a challenging market environment.

Let's develop a plan for integrating the Lean concept into the activities of Fort-Post LLC (Table 3).

This plan is an important tool for the successful integration of the Lean concept at Fort-Post LLC. Forming a team of dedicated and competent employees who will be involved in Lean integration will create a favourable atmosphere of cooperation and exchange of ideas. Evaluation of preliminary results and presentation of the strategy will help to understand what aspects need to be improved in the context of the Lean concept.

Table 3 – Plan for the integration of the Lean concept in Fort-Post LLC

Step 1: Understanding Lean and setting goals	Introduction to the Lean concept. Training and education of employees on the basics of Lean, its principles and benefits.
	Defining the purpose and goals. Establish clear goals that the company wants to achieve through Lean implementation, such as increasing productivity, reducing cycle time, reducing costs, etc.
Step 2: Analyse and assess the current state	Process evaluation and cost identification. Analyse and identify the main processes where Lean can be applied, identify and assess current costs.
	Process flow mapping. Create a flow map to better understand your processes and identify redundancies and wasteful costs.
Step 3: Planning and strategy development	Defining a Lean implementation strategy. Developing a detailed plan, identifying priority areas for Lean implementation and defining steps for each area.
	Formation of teams and leadership. Create teams that will be responsible for implementing and coordinating Lean across the company's various departments, as well as appointing project leaders.
Step 4: Implementation and execution	Staff training and support. Conduct training for all staff to ensure they understand and support Lean.
	Testing and implementation of changes. Launching pilot projects according to the developed plan, gaining previous experience in implementing Lean.
Step 5: Evaluation and continuous improvement	Measurement and analysis of results. Identifying key performance indicators and evaluating the results of Lean implementation.
	Continuous improvement and optimisation. Discussion of the results achieved, identification of opportunities for Lean improvements in the company.
Step 6: Embracing and sustaining a Lean culture	Establishing Lean as a culture. Create conditions for establishing Lean as a key element of the organisational culture and ensuring that all employees adhere to it.
	Overseeing the implementation and spread of Lean. Establishing a monitoring system and providing support to ensure the continued success and spread of Lean across all aspects of the company.

Source: compiled by the author on the basis of (Hryhoriev & Habor, 2022, p.15)

In general, this plan enables step-by-step adaptation of strategy and business processes to the principles and goals of the Lean concept, ensuring effective and efficient integration of this concept into the organisation.

Conclusions

In summary, the article analyses the LEAN concept, focusing on its principles and methodology in the context of optimising business processes and improving the efficiency of enterprises. The importance and benefits of implementing this concept for enterprises in the current competitive environment are assessed. The article also assesses the impact of political, economic, socio-cultural and technological factors on the activities of Fort-Post LLC, deepened understanding of the nature of the activities and features of the construction industry, which is a key aspect for the successful integration of the LEAN concept.

Based on the analysis, were developed tips for integrating the LEAN concept into the business processes of Fort Post LLC, taking into account the peculiarities of the enterprise and the specifics of the industry. The proposed recommendations are aimed at facilitating the implementation of LEAN with maximum efficiency and minimising possible difficulties. In general, the integration of the LEAN concept into the activities of Fort-Post LLC has the potential to significantly improve the company's efficiency, reduce costs and increase competitiveness in the construction services market.

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