THE CHALLENGES AND SOLUTIONS TO IMPLEMENTING THE LEAN CONCEPT: THE CASE OF LITHUANIAN COMPANIES

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Abstract: Lean philosophy is one of the wide-ranging ways to promote efficiency while emphasizing a high level of awareness about the customer. Despite the attempts by multiple companies worldwide to implement partial or whole spectrum of the Lean concept for better performance, the failure rate in the Lean transformation among organizations reaches as high as 90%. The paper aims to identify the main challenges and barriers to Lean implementation in Lithuania and to provide proposals on how to facilitate it. To achieve this aim, the authors of the paper present a theoretical conceptual model that illustrates the main benefits, barriers, and proposals for successful Lean implementation. Based on the theoretical analysis, qualitative research in the form of semi-structured interviews based on open-ended questions was used. The results of empirical research revealed that most companies implement the Lean concept with the aim to reduce different types of waste, simplify the processes and make them more efficient, increase production capacity, and ensure more effective customer service. The most successful Lean tools addressing the existing problems are 5S (6S), process mapping, standardization, visual management, Kaizen, and Kanban. The main barriers which delay Lean transformations can be grouped into people-related, organizational, and process-related. Employee training, motivation, Lean leadership, and creation of an enabling culture could be the main recommendations for the facilitation of challenges and barriers to Lean implementation.

Key words: Lean concept, Lean implementation, challenges and barriers, Lithuania

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Introduction

Currently, with the globalized world and highly competitive markets, companies face a multitude of complex factors affecting them (Dillinger et al., 2021). In order to operate under such conditions, they have to be continuously creative, innovative, and efficient (Benkarim and, Imbeau, 2021; Čiarnienė and Vienažindienė, 2015). This forces companies to implement new production strategies to enhance their

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competitive capacity in the tough global market (Čiarnienė and Vienažindienė, 2015; Metha and Dave, 2020; Amine and Hadri, 2021).

Global events and unexpected crises worldwide urge companies to analyze their processes and operations and look for ways to improve their efficiency and effectiveness. The Lean philosophy, which has evolved from the Toyota production system (TPS), is one of the wide-ranging ways to promote efficiency, while emphasizing a high level of awareness about the customer (Amine and Hadri, 2021). It provides a suitable framework to address the high degree of complexity in the company environment while focusing on customer value (Dillinger et al., 2021). Through the systematic interaction of principles and methods, Lean aims at increasing the economic efficiency of production by consistently and thoroughly eliminating different types of waste (Dillinger et al., 2021; Rossi et al., 2022). Womack and Jones (2003) suggest that Lean should be understood as not just production, but an all-encompassing business ideology that incorporates all aspects of value streams as opposed to individual production processes (Alkhoraif and McLaughlin, 2018). It is not just a set of tools or recipes, but an entire management approach, and its implementation requires focusing on many factors (Huaman-Orosco et al., 2022). Lean provides a methodology, an integrated system of principles, practices, tools, and techniques whereby the organizations can significantly improve their responsiveness to customers while decreasing costs and waste in supply and operational procedures (Alkhoraif and McLaughlin, 2018).

For several decades, scientists and practitioners all over the world have been investigating the Lean concept. The research works and examples of good practice worldwide show, that Lean is not limited to a specific type or size of business. It is acceptable for various business types, sizes, and industries that strive to improve their operations, increase competitive advantage, and enhance profits (Gebeyehu et al., 2022). Despite numerous success examples of Lean, and a lot of success stories have been recorded, many companies still find it challenging and face problems in Lean implementation (Kafuku, 2019; Leksic et al., 2020; Maware and Parslety 2022; Kurpjuweit et al., 2019; Euchner, 2022). The organizations that implement Lean have challenges in adopting the philosophy of their employees, processes, and management (Huaman-Orosco et al., 2022). The failure rate in Lean transformation among organizations amounts to 90% (Hines, 2018; Benkarim and Imbeau, 2021).

During the past decade, the main challenges and barriers to Lean implementation have been investigated by Bollbach (2012), Čiarnienė and Vienažindienė (2015), Belhadi et al. (2016), Berlec et al. (2017), Alkhoraif and McLaughlin (2018), Niewiadomski et al. (2018), Dehdasht and Zin (2018), Koloszar (2018), Kurpjuweit et al. (2019), Abu et al. (2019), Kafuku (2019), Bayhan et al. (2019), Tezel et al. (2020), Amin and Hadri (2021), Asadian et al. (2021), Benkarim et al. (2021), Huaman-Orosco et al. (2022), Euchner (2022), Maware and Parslety (2022), Schulze and Dallasega, (2023), and others. Despite significant research studies on various aspects of the Lean concept, there is a lack of clarity in this field regarding the reasons behind Lean implementation not always so successful, and regarding the main challenges and barriers. These challenges differ from country to country

depending on the country's socio-cultural conditions and technical capabilities, and from industry to industry.
The purpose of this paper is to identify the main challenges and barriers to Lean implementation in Lithuania and to provide proposals on how it could be facilitated.

Literature Review

Lean Concept

The concept of Lean stems from a manufacturing approach pioneered by the Japanese engineers Taiichi Ohno and Shigeo Shingo (Marques et al.,2022). Its popularity increased at the end of the 1980s (Čiarnienė and Vienažindienė, 2015; Lima et al., 2023). Since then, the concept has spread beyond Toyota to different industries across the globe (Marques et al., 2022). Diverse definitions for the concept "Lean" can be found in scientific literature. Summarizing the analyzed research works it can be stated that Lean concept has a multidimensional essence and can be described at different levels of abstraction (Figure 1). On the strategic level, it can be described as a philosophy and a way of thinking. On the tactical level, it is expressed by a set of principles, while on an operational level, it is realized through a wide variety of practices and tools, which can be effectively adopted by any type of organization to eliminate anything that does not create value (Čiarnienė and Vienažindienė, 2015; Leksic et al., 2020, Marques et al., 2022).

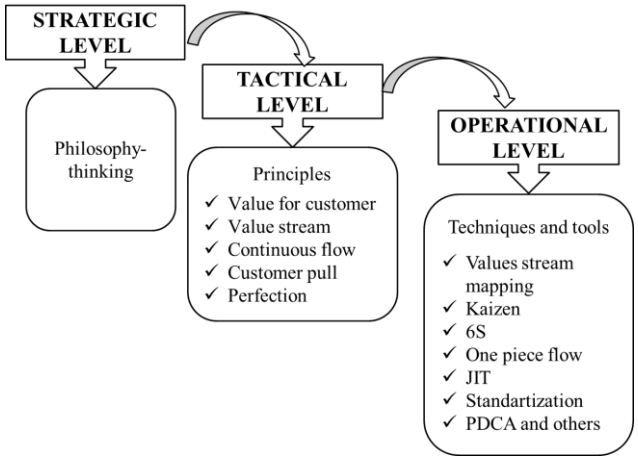

Figure 1: Multidimensional Essence of Lean Concept
Source: Own elaboration

Many studies were conducted to examine the positive results of the Lean application and numerous benefits for the customer and business have become globally acknowledged (Lima et al., 2023). The application of Lean concept has demonstrated continuous improvement in processes and organizational performance, decreased lead time, reduced setup time, improved quality, enhanced productivity, increased product reliability, improved customer satisfaction, less work in process, reduced

inventory and floor space, reduced production costs, improved flexibility, efficiency and profitability, and increased competitiveness (Čiarnienė and Vienažindienė, 2015; Niewiadomski et al., 2018; Kafuku, 2019; Metha and Dave, 2020; Maware and Parsley, 2022; Lima et al., 2023). This success implies that Lean is universal and not a short-lived phenomenon (Maware and Parsley, 2022).

Challenges and Barriers to Implementing Lean

Despite its potential benefits, the implementation of Lean may encounter a range of challenges and barriers that could hinder its success. Different industries, types of production, countries, and small and medium-sized enterprises (SMEs) have been described by various authors as having barriers to Lean implementation (Koloszar, 2018; Amine and Hadri, 2021; Abu et al., 2019; Kafuku, 2019; Tezel et al., 2020; Huaman-Orosco et al., 2022; Euchner, 2022). One of the main barriers to Lean implementation is the resistance to change which may come from various sources such as employees, managers, and organizational culture (Dehdasht and Zin, 2018; Belhadi, et al., 2016; Schulze and Dallasega, 2023; Huaman-Orosco et al, 2022). Employees may resist the change due to the fear of job loss, lack of understanding, or scepticism about the benefits of Lean. Managers may resist due to the perceived cost of implementation or reluctance to relinquish control over processes. Organizational culture can also be a significant barrier if it values stability over innovation. To overcome resistance to change, organizations should involve employees in the implementation process, communicate the benefits of Lean practices, and provide opportunities for feedback and suggestions. Another significant barrier to Lean implementation is inadequate training and education (Asadian et al., 2021; Abu et al. 2019; Kafuku, 2019; Belhadi et al., 2016). For Lean to be successful, employees need to have a thorough understanding of Lean principles and practices, otherwise, they may struggle to identify waste or implement Lean techniques effectively (Kurpjuweit et al., 2019; Maware and Parsley, 2022).

A lack of leadership support can also hinder the implementation of Lean as it requires strong leadership to create a culture of continuous improvement and drive change (Bayhan et al., 2019; Amine and Hadri, 2021; Kafuku, 2019; Niewiadomski et al., 2018). Finally, Lean implementation may face challenges due to internal and external factors such as the complexity of the organization's processes, regulatory constraints (Schulze and Dallasega, 2023; Asadian et al., 2021; Abu et al., 2019), or economic conditions (Maware and Parsley, 2022; Dehdasht and Zin, 2018; Amine and Hadri, 2021). Complex processes may make it challenging to identify and eliminate waste, while regulatory constraints may limit the scope of Lean implementation. Economic conditions may also pose challenges if Lean implementation requires significant upfront costs that the organization cannot afford. Schulze and Dallasega (2023) present a slightly different categorization of Lean implementation barriers, classifying them into seven clusters related to organisation, management, knowledge, cultural, financial, customer, and non-context-specific Lean implementation barriers. Dehdasht and Zin (2018) have also compiled seven categories of barriers, but their classification is slightly different and includes

management, awareness and education, financial drivers, resource availability, technical issues, people and culture, and environmental concerns.

Summarizing research results by Čiarnienė and Vienažindienė (2015), Belhadi et al. (2016), Niewiadomski et al. (2018), Dehdasht and Zin (2018), Koloszar (2018), Kurpjuweit et al. (2019), Abu et al. (2019), Kafuku (2019), Bayhan et al. (2019), Tezel et al. (2020), Benkarim et al. (2021), Amine and Hadri (2021), Asadian et al. (2021), Maware and Parsley (2022), Schulze and Dallasega, (2023), the authors of this paper highlight three main categories of barriers: people-related, organizational, and process-related. Table 1 depicts the categorization of the primary barriers that impede the achievement of successful Lean implementation.

Table 1. The main barriers to Lean implementation

Categories of barriers		Description
People-related	Resistance to change/Lack of employee buy-in	Employees may resist due to the fear of change, loss of job security, and lack of understanding of the benefits of Lean. They may also be resistant to change if they are comfortable with the current way of doing things. This may lead to a lack of motivation and buy-in.
	Resistance to standardization	Employees may be resistant to the standardization of processes and procedures due to the desire to maintain control over their work or the belief that standardization will stifle creativity.
	Lack of motivation	Employees may lack motivation due to the lack of understanding of how their role fits into the overall Lean process or due to the lack of recognition.
	Inadequate training	Inadequate skills and knowledge to use the Lean tools and techniques effectively may lead to frustration and resistance to change.
	Poor/ Insufficient communication	Lack of communication may result in the lack of understanding and support for Lean practices throughout the organization.
	Lack of trust	Without trust between employees and management, it is difficult to achieve the necessary level of commitment and collaboration in implementing Lean.
	Workforce fluctuation	Enterprises may have higher staff turnover, so Lean knowledge may be lost more easily.
Organizational	Lack of leadership support	Without strong support from top management, it is difficult to achieve the necessary level of commitment and resources.
	Lack of resources	Lack of time, money, and personnel, can make it difficult to implement Lean practices effectively.
	Inappropriate performance metrics	Traditional performance metrics may not be aligned with Lean practices, resulting in a focus on wrong areas and hindering the adoption of Lean.

	Silo mentality	Departments may have their own goals, which may result in the lack of collaboration and a focus on individual rather than organizational performance.
	Lack of continuous improvement culture	Lean practices may not be sustained without a culture of continuous improvement, lack of leadership support, focus on short-term goals over long-term improvement, or resistance to change.
	Hierarchical structures	Due to the rigid hierarchical structures, employees may be hesitant to question the status quo, and managers may be resistant to delegating authority.
Process-related	Inefficient processes	This can be due to outdated technology, poorly designed workflows, or lack of standardization.
	Lack of process visibility	Besides the lack of data, inadequate tracking systems, or insufficient process documentation, it may be challenging to identify areas for improvement and measure progress.

Source: Prepared by the authors according to Čiarnienė and Vienažindienė, 2015; Belhadi, et al., 2016; Niewiadomski et al., 2018; Dehdasht and Zin, 2018; Koloszar, 2018; Kurpjuweit et al., 2019; Abu et al., 2019; Kafuku, 2019; Bayhan et al., 2019; Tezel et al., 2020; Benkarim et al., 2021; Amine and Hadri, 2021; Asadian et al., 2021; Maware and Parsley, 2022; Schulze and Dallasega, 2023.

In summary, it could be argued that organizational barriers mainly relate to the company's structure and policies, people-related barriers come from human behaviour and attitudes, and process-related barriers arise from unclear, inefficient, and undefined operational processes.

Lean Implementation

Many companies implement Lean principles and techniques with the view towards customer and business-related benefits, but in many cases, Lean transformation programmes are not easy. Based on the analysis of scientific literature and examples of best practice, the authors of this paper propose a conceptual theoretical model of Lean implementation (Figure 2).

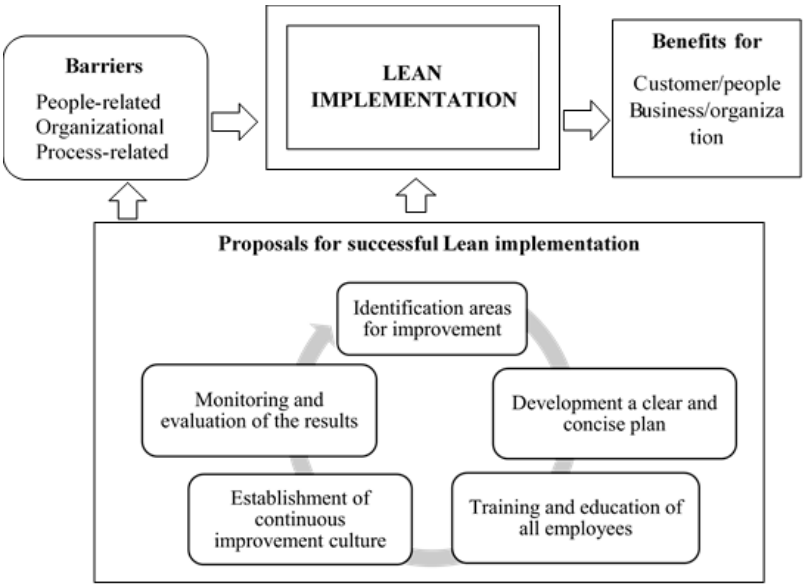

Figure 2: Conceptual theoretical model of Lean implementation
Source: Own elaboration

To facilitate Lean implementation, it is essential to follow a systematic approach that involves several steps. First, it is necessary to identify the goals and objectives of the organization to determine specific areas where the Lean methodology could be implemented. This can be done by conducting a comprehensive assessment of the existing processes, operations, and systems, as well as identifying areas of waste and inefficiency. Once the areas for improvement have been identified, the next step is to develop a clear and concise plan for the implementation of the Lean concept. This plan should include specific objectives, timelines, and metrics to track the progress and ensure that the implementation process stays on track (Niewiadomski et al., 2018; Marques et al., 2022). To successfully implement Lean, it is also important to ensure that all employees are trained and educated on Lean principles, Lean tools, and techniques. Additionally, it is crucial to transform the company's culture by establishing a culture of continuous improvement within the organization, where all employees are encouraged to identify areas for improvement and share their ideas (Maware, 2022; Leksic et al., 2020; Berlec et al., 2017). This can be achieved through regular communication and feedback sessions, as well as by recognizing and rewarding employees who contribute to the success of the Lean implementation process. Finally, it is important to monitor and evaluate the results of the Lean implementation process regularly. This could involve tracking key performance indicators (KPIs), such as productivity, quality, and customer satisfaction (Kurpjuweit et al., 2019), to ensure that the organization is achieving its goals and objectives. In summary, facilitating Lean implementation requires a systematic approach that involves identifying areas for improvement, developing a clear plan,

training employees, establishing a culture of continuous improvement, and monitoring, and evaluating results.

Based on the scientific literature review, the following research questions have been raised by the authors of the article: 1) What are the main reasons behind the implementation of Lean concept? 2) What are the main challenges and barriers to Lean implementation? 3) How do companies benefit from Lean implementation?

Research Methodology

With the goal of disclosing the main challenges and solutions to implementing the Lean concept in Lithuania, qualitative research in the form of a semi-structured interview was used. Qualitative research methods are highly effective for gathering data when the researcher aims to obtain qualitative, open-ended data, explore the participants' thoughts, feelings, and beliefs regarding a specific topic, and delve deeply into personal and often sensitive issues (DeJonckheere, Vaughn, 2019). It is a versatile and flexible method that ensures two-way communication between the interviewer and the research participant and allows for improvisation by asking further questions based on the answers received (Kallio et al., 2016; Gaižauskaitė and Valavičienė, 2016; Čiarnienė et al., 2023).

Sampling strategies in qualitative research are influenced by both the research questions and the purpose of the study. Unlike quantitative studies, where achieving statistical representativeness is the objective, qualitative research does not involve calculating the statistical power or aiming for a large sample size. Instead, qualitative approaches prioritize obtaining an in-depth and comprehensive understanding and typically employ purposeful sampling techniques (DeJonckheere, Vaughn, 2019; Gaižauskaitė and Valavičienė, 2016).

Achieving data saturation is the most commonly used concept for estimating sample size in qualitative research (Guest et al., 2020). The data saturation point not only ensures the validity and reliability of the information for the study but also saves the researchers' time and energy by avoiding collecting the same information (Mwita, 2022). Various authors recommend different sample sizes, which can range from 5 to 60 (Guest et al., 2020; Hennink and Kaiser, 2022; Čiarnienė et al., 2023). According to Hennink and Kaiser (2022), data saturation can be achieved even with a relatively small sample, such as 9–17 interviews, while DeJonckheere and Vaughn (2019) indicate 8–12 interviews. In this study, data saturation was determined after twelve interviews. Interviewees were selected according to their availability, willingness to be interviewed, first-hand experiences, and knowledge pertaining to the subject of interest. The participants were top and middle-level managers of companies implementing Lean, representing different areas of activity: 4 – manufacturing, 2 – trade, 2 – finance, 2 – health service, and 2 – logistics. The interviewees were provided with information about the research and the purpose of the study. Codes such as M1-M4 (manufacturing), T5-T6 (trade), F7-F8 (finance), H9-H10 (health service), and L11-L12 (logistics companies) were assigned to each research participant to ensure the preservation of privacy. Individual interviews were

held, where the researcher interacted with each research participant separately. In most cases, it was a direct face-to-face interview, when the researcher and the research participant sat down together for a conversation, which allowed them to create a personal connection and to record more than just verbal signs during the interview. 3 interviews were conducted remotely via the Teams platform. The average interview duration was about 50 min. The interviews were held in January–March 2023 in the Republic of Lithuania. The interviews were recorded, translated, and transcribed. Qualitative content analysis was applied for raw data processing. Data obtained during the interview were processed by interpreting, systematising, analysing, and categorising the responses.

Research Results

Data from the informants' responses are used to support the views shared by the participants in terms of categories and subcategories. The answers to the first research question were analysed for the reasons to implement Lean concept and reflected in the repeated groups of reasons (Table 2).

Table 2. Reasons to implement Lean concept

Reasons	M1	M2	M3	M4	T5	T6	F7	F8	H9	H10	L11	L12
Waste reduction	√	√			√	√		√	√		√	√
Better results					√				√			
Positive experience							√			√	√	
Quality improvement		√	√			√		√	√		√	
Cost reduction		√	√	√	√	√		√		√	√	√
Resource utilization	√						√	√	√	√		√
Delivery time reduction	√	√						√		√	√	
Trips and distance reduction	√		√	√	√				√		√	√
Space utilization						√						√
Inventory optimization		√		√	√	√			√		√	√
Processes simplification and optimization	√	√		√	√				√		√	
Customer service improvement and complaints reduction			√		√		√					
Production capacity increase	√		√									
Facilitation of communication									√		√	
Management improvement			√	√		√	√			√		√

According to the interviewees, there were many reasons why companies implemented the Lean concept. Informants from all types of activity emphasized the necessity to reduce different types of waste. More efficient use of resources leads to reduced company costs. The aspiration to simplify processes and optimize the inventory was highlighted by the interviewees from all activities except finance. In contrast, such reasons as production capacity increase, space utilization, and customer service improvement were pointed out by only a few interviewees.

Based on the second research question, the informants' opinion about the challenges and barriers to Lean implementation and solutions for barriers elimination were analyzed. The barriers were grouped into three subcategories: 1) people-related, 2) organizational, and 3) process-related. A systematic analysis of explanatory statements about the barriers to Lean implementation by subcategory is presented in Table 3.

Table 3. Barriers to Lean implementation

Barriers	M1	M2	M3	M4	T5	T6	F7	F8	H9	H10	L11	L12
People-related												
Poor communication of Lean benefits		√										
Resistance to change and improve			√	√				√	√	√		√
Lack of clarity and information	√					√						
Lack of leadership			√		√						√	√
Different understanding, disbelief in Lean		√			√				√			
Lack of engagement	√					√	√				√	
Lack of knowledge									√			
Failures of past initiatives						√						
Organizational												
Non-compliance with the strategy	√									√		
Abundance of work		√										
Costs of Lean implementation			√							√		
Lean as a fad				√								
Inflexible application of Lean tools					√							
Lack of funds and human resources												√
Non-encouraging culture							√					
Process-related												
Unwillingness to change processes				√								
Inefficient, not defined processes		√							√			
Lack of visualization											√	
Equipment maintenance issues			√									

Inconvenient layout										√		
Scarce focus on data and measurement												√

According to the informants' responses, the main barriers that prevent or delay Lean transformations are: the old ways of working and resistance to changes; lack of knowledge and engagement; lack of leadership; poor communication; failure of past initiatives; lack of resources; weak link between organizational strategy and Lean concept; high cost of implementation; data collection and results measurement. The has study revealed that the major challenge to Lean implementation is people-related barriers. Table 3 demonstrates the relevance and frequency of this subcategory to all informants without exception. Organizational barriers were noted by interviewees from all activities but their relevance and frequency were not so high. Meanwhile, process-related barriers were emphasized only by the representatives from manufacturing, health care, and logistics companies.

The informants referred to the following solutions applied by them for elimination of the mentioned barriers: training of management and employees (M2, M3, F7, H9); explanation of the importance and benefits of Lean (T5, M4); motivation of employees for successfully implemented ideas (M4, M3, F7); person or team in charge of Lean (M4, F8); creating an enabling culture (T6, L11).

The third research question addressed the benefits of Lean implementation. The study revealed that the companies experienced various benefits from Lean application. Two subcategories were identified upon assessment of the interviewees' responses: 1) customer/people-related and 2) business/organization-related (Table 4). The research has revealed that all informants emphasized the benefits related to cost reduction, the benefit that is extremely important both from customer and business perspectives. Reduced delivery time as customer-related and business-related benefit were more relevant to manufacturing, trade, health care, and logistics companies.

Table 4. Benefits from Lean implementation

Benefits	M1	M2	M3	M4	T5	T6	F7	F8	H9	H10	L11	L12
Customer/people-related												
Reduced delivery time	√	√	√								√	
Reduced defects, improved quality	√						√		√			
Reduced costs	√	√	√	√	√	√	√	√	√	√	√	√
Increased productivity	√		√									
Synchronized supply with demand					√							√
Customer satisfaction						√	√		√		√	
Business/organization-related												
Expanded market share	√										√	
Higher competitiveness	√										√	
Faster problem-solving and decision-making							√	√	√	√		
Reduced transportation			√								√	√
Reduced inventory		√			√	√						√
Cost reduction	√	√	√	√	√	√	√	√	√	√	√	√
Reduction in space			√									√
Increased capacity					√							√
Better resource utilization	√						√	√	√	√		√
Delivery time reduction	√	√						√		√	√	

The research has disclosed that customer satisfaction as a people-related benefit is more relevant to service providers, i.e. trade, health care, and logistics. Reduced defects and improved quality as people-related benefits were noted by the representatives of manufacturing, finance, and health care. Summarizing the interviewees' statements about the business/organization-related benefits it could be stated that better resource utilization was mentioned by the informants representing all activities except trade. Participants representing manufacturing, trade, and logistics companies pointed out the reduced inventory, while finance and health care representatives mentioned faster problem-solving and decision-making.

Discussion

Through the systematic analysis of the scientific literature and empirical research, it has been demonstrated that Lean is an essential concept that facilitates the reduction of diverse types of waste and enhances the activities of numerous organizations (Alkhoraif and McLaughlin, 2018; Kafuku, 2019).

The implementation of Lean involves a complex series of actions, including planning for change, creating a positive environment, making necessary preparations, employing a range of tools and techniques, and monitoring progress through the use of specific performance metrics (Niewiadomski et al., 2018; Marques et al., 2022; Rossi et al., 2022). However, to ensure successful implementation, it is crutial to eliminate the people-related, organizational, and process-related barriers, and customize the Lean principles to the distinctive requirements of each organization. The analysis of results has revealed that the primary barriers that hindered or delayed Lean implementation in the analyzed companies were the resistance to change and adherence to old ways of working, lack of knowledge and engagement, poor leadership, inadequate communication, previous failed initiatives, lack of resources, weak alignment between organizational strategy and Lean concepts, high implementation costs, and challenges associated with data collection and result measurement. This aligned with the research works previously conducted by Niewiadomski et al. (2018), Dehdasht and Zin (2018), Bayhan et al. (2019). Abu et al. (2019), Asadian et al. (2021), Schulze and Dallasega (2023). Moreover, the study has identified that training management and employees, explaining the significance and benefits of Lean, motivating employees to embrace and implement Lean ideas, appointing a person or team in charge of Lean, and creating a supportive culture were the primary solutions for overcoming the barriers. This result supports the results of previous research works conducted by Metha et al. (2020), Kafuku (2019), Berlec et al. (2017), and Maware (2022). These solutions highlight the importance of effective communication, leadership, and a collaborative approach to Lean implementation that empower employees and foster a culture of continuous improvement. By addressing the barriers and implementing the solutions, organizations can increase their likelihood of success in adopting Lean principles and enjoying the associated benefits.

In addition to investigating the barriers to Lean implementation, this study has also explored the benefits associated with the adoption of Lean principles in Lithuanian companies. The results have revealed that Lean implementation provided several benefits, including the reduction of various types of resources, reduced delivery time, increased productivity, reduced inventories and floor space, decreased handling distances, improved quality, faster problem-solving and decision-making processes, and higher levels of customer satisfaction. These findings are in line with research works conducted by Lima et al. (2023), Metha and Dave (2020), Tezel et al. (2020) and demonstrate the potential of Lean to generate significant benefits for organizations, which can help to enhance their overall performance and competitiveness.

The findings of this study have practical implications for the individuals who are involved in implementing the Lean concept in business, as well as for scholars who analyze this topic from the theoretical and empirical perspectives. Practitioners can benefit from the insights provided by this research in terms of understanding the factors that contribute to successful implementation and the need for customization of the Lean principles to the unique requirements of individual organizations. Researchers can draw upon the results of this study to refine existing theories and develop new ones that shed further light on the usefulness of Lean implementation in organizations.
Concerning further research, it would be worthwhile to examine the main challenges and barriers to Lean implementation and solutions of how to facilitate them across different countries and cultures.

Conclusion

The research works and examples of good practice worldwide show that Lean is applicable to businesses of various types, sizes, and industries that strive to improve their performance (Kafuku, 2019). Various benefits for businesses and customers have been globally acknowledged (Lima et al., 2023). Although there are numerous success examples of Lean, and many companies have begun to adopt Lean principles, many of them found it challenging and had limited success (Maware and Parslety, 2022; Euchner, 2022). Each case of Lean implementation is unique, and in every company, there are many barriers to effective implementation (Niewiadomski et al., 2018).
The authors of the paper present the theoretical conceptual model which illustrates the main benefits, barriers, and proposals for successful Lean implementation. The results of empirical research have revealed that most of the companies implement Lean concept aiming to reduce different types of waste, simplify processes and make them more efficient, o increase production capacity, and ensure more effective customer service. The main barriers which delay Lean transformations are grouped into people–related, organizational, and process–related. Training, motivation of employees, Lean leadership, and creation of an enabling culture could be the main recommendations on how to facilitate challenges and barriers to Lean implementation. Moreover, it is essential to follow a systematic approach that involves several steps: 1) to identify the goals and objectives of the organization to determine the specific areas for improvement; 2) to develop a clear and concise plan for the implementation of Lean concept; 3) to ensure that all employees are trained and educated on Lean principles, Lean tools, and techniques; 4) to transform company's culture establishing a culture of continuous improvement; 5) to monitor and evaluate the results of the Lean implementation process.

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WYZWANIA I ROZWIĄZANIA ZWIĄZANE Z WDRAŻANIEM KONCEPCJI LEAN: PRZYPADEK LITEWSKICH PRZEDSIĘBIORSTW

Streszczenie: Filozofia Lean jest jednym z szeroko zakrojonych sposobów promowania wydajności przy jednoczesnym podkreśleniu wysokiego poziomu świadomości oczekiwań klienta. Pomimo podejmowanych przez wiele firm na całym świecie prób wdrożenia części lub całego spektrum koncepcji Lean w celu uzyskania lepszych wyników, wskaźnik niepowodzeń w transformacji Lean wśród organizacji sięga nawet 90%. Artykuł ma na celu zidentyfikowanie głównych wyzwań i barier związanych z wdrażaniem Lean na Litwie oraz przedstawienie propozycji ukierunkowanej na poprawę skuteczności wdrożeń. Aby osiągnąć ten cel, autorzy artykułu przedstawiają teoretyczny model koncepcyjny, który ilustruje główne korzyści, bariery i propozycje udanego wdrożenia Lean. W oparciu o analizę teoretyczną zastosowano badania jakościowe w formie częściowo ustrukturyzowanych wywiadów opartych na pytaniach otwartych. Wyniki badań empirycznych wykazały, że większość firm wdraża koncepcję Lean w celu zmniejszenia różnych rodzajów marnotrawstwa, uproszczenia procesów i zwiększenia ich wydajności, zwiększenia zdolności produkcyjnych i zapewnienia bardziej efektywnej obsługi klienta. Najskuteczniejsze narzędzia Lean rozwiązujące istniejące problemy to 5S (6S), mapowanie procesów, standaryzacja, zarządzanie wizualne, Kaizen i Kanban. Główne bariery opóźniające transformację Lean można podzielić na te związane z ludźmi, organizacją i procesami. Szkolenie pracowników, motywacja, przywództwo Lean i tworzenie sprzyjającej kultury mogą być głównymi zaleceniami dotyczącymi ułatwiania wyzwań i barier we wdrażaniu Lean.

Słowa kluczowe: Koncepcja Lean, wdrożenie Lean, wyzwania i bariery, Litwa.