



## USE OF LEAN MANAGEMENT IN AUTOMOTIVE TEXTILE INDUSTRY IN SHTIP, NORTH MACEDONIA – ORGANIC OR MECHANIC APPROACH

Scientific paper  
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**ABSTRACT:** This study examines the application of Lean management in the automotive-textile industry, exploring whether companies perceive Lean as a technical tool for achieving rapid operational efficiency or as a comprehensive management philosophy that evolves through people and organizational culture. In practice, many Lean implementations remain limited to processes and technical tools, while neglecting philosophy, people, and systematic problem-solving, resulting in short-term improvements that fail to sustain continuous improvement over time. This challenge is particularly significant in labor-intensive manufacturing processes, such as sewing, where investment in human capital and the development of a strong organizational culture are essential for achieving long-term efficiency and organizational stability. The findings highlight the importance of adopting a balanced approach to all elements of Lean management in order to support sustainable development and enhance organizational competitiveness.

**Keywords:** Lean management; Toyota Production System (TPS); organic and mechanical approach; automotive-textile industry; organizational culture.

## PRIMENA LEAN MENADŽMENTA U AUTOMOBILSKO-TEKSTILNOJ INDUSTRIJI U ŠTIPU, SEVERNA MAKEDONIJA – ORGANSKI ILI MEHANIČKI PRISTUP

**APSTRAKT:** Istraživanje analizira primenu Lean menadžmenta u automobilsko–tekstilnoj industriji, pri čemu se razmatra da li kompanije Lean shvataju kao tehnički alat za brzu efikasnost ili kao živi sistem koji se razvija kroz ljude i organizacionu kulturu. Praksa pokazuje da mnoge implementacije ostaju ograničene na procese i alate, uz zanemarivanje



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*filozofije, ljudi i rešavanja problema, što dovodi do kratkoročnih rezultata i neodrživosti kontinuiranog unapređenja. Posebno u radno intenzivnim manuelnim procesima kao što je šivenje, ulaganje u ljude i izgradnja organizacione kulture predstavlja ključni faktor za dugoročnu efikasnost i stabilnost. Analiza naglašava potrebu za uravnoteženim pristupom svim elementima Lean-a, kako bi se obezbedio održivi razvoj i konkurentnost.*

**Ključne reči:** TPS, Lean menadžment, Organski i mehanički pristup, Automobilaska industrija, Tekstilna industrija.

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## 1. INTRODUCTION

In today's rapidly evolving business environment, Lean management has become one of the most influential management philosophies worldwide. Its primary objective—the elimination of waste and the resulting improvement in operational efficiency and cost reduction—has encouraged many organizations to adopt Lean principles. However, the long-term sustainability of Lean implementation remains a significant challenge, particularly when Lean is applied as a collection of technical tools rather than as a comprehensive management philosophy.

The **Toyota Production System (TPS)** is widely recognized as the foundation of Lean production and has profoundly influenced modern manufacturing and management practices over the past three decades. Built on the principles of continuous improvement (*Kaizen*) and respect for people, Lean management extends far beyond the application of technical methods and process optimization. Instead, it represents a holistic management philosophy that integrates organizational culture, employee development, and systematic problem-solving. Nevertheless, many organizations continue to implement Lean primarily as a cost-reduction initiative, focusing on operational tools while overlooking the cultural and human dimensions that are essential for sustainable success.

Such a mechanistic approach may generate short-term improvements; however, it often fails to produce lasting organizational transformation and may ultimately compromise the sustainability of Lean initiatives. The true essence of Lean lies in its role as a continuous learning system that promotes teamwork, employee engagement, disciplined processes, and continuous organizational improvement. Consequently, Lean should not be regarded as a collection of tools for achieving rapid results, but as a long-term management philosophy that requires sustained investment in people and the development of a strong organizational culture.

As Liker emphasizes [1], *"Toyota calls its operators 'team members,' and managers speak of them with deep respect because these are the people who directly contribute to making the product and are dedicated to continuous improvement."* This perspective highlights one of the fundamental principles of Lean management: sustainable organizational success depends not only on efficient processes but also on the continuous development, engagement, and empowerment of people.



Therefore, the objective of this study is to examine how Lean management is perceived within an automotive-textile company in Štip, North Macedonia, and to determine whether managers primarily adopt an organic perspective, which emphasizes people and organizational culture, or a mechanical perspective focused on technical tools and process efficiency.

## 2. MATERIALS AND METHODS

The study was conducted in a modern company operating within the automotive-textile industry, which is part of a global corporation headquartered in North Macedonia. The company has been operating for more than ten years and employs over 1,000 people. As part of its continuous improvement strategy, the company has implemented various contemporary management practices, with Lean management representing one of its principal organizational challenges.

The study population consisted of 35 respondents from different levels of the organizational hierarchy. The first group included the General Manager and operational sector managers, while the second group comprised coordinators who, although positioned one level below management, are responsible for supervising a substantial number of employees. Data were collected using a structured questionnaire based on a five-point Likert scale to assess managerial perceptions of Lean management. The questionnaire was designed to determine whether respondents perceive Lean primarily as a comprehensive management philosophy (organic approach) or as a technical system focused on waste elimination and operational efficiency (mechanical approach).

The conceptual framework of the study is based on the 14 principles of Lean management and Liker's 4P model, consisting of Philosophy (long-term vision and values), Process (efficient and standardized workflows), People (employee development, motivation, and organizational culture), and Problem Solving (continuous learning and systematic improvement). These four dimensions provided the analytical framework for evaluating managerial perceptions of Lean implementation [1].

## 3. RESULTS AND DISCUSSION

Figure 1 presents the distribution of respondents' perceptions across five categories: **organic approach**, **mechanical approach**, **between organic and mechanical**, **traditional approach**, and **don't know/no opinion**. The analysis was conducted according to the four pillars of Lean management defined by the 4P model: Philosophy, Process, People, and Problem Solving.

Philosophy - The **mechanical approach** represents the dominant perception (46%), indicating that Lean is primarily viewed as a technical method for eliminating waste rather than as a comprehensive management philosophy. Since philosophy constitutes the foundation of the Lean 4P model, this finding is particularly significant. A predominantly mechanical understanding of Lean influences not only process design but also organizational culture, employee development, and approaches to continuous



improvement. **This finding suggests that the organization places greater emphasis on operational efficiency than on developing a long-term Lean culture. Consequently, the sustainability of Lean initiatives may be limited if organizational values and leadership commitment are not strengthened. This observation is consistent with previous studies, which indicate that many organizations initially adopt Lean as a set of technical tools for improving operational efficiency while giving insufficient attention to organizational culture and leadership, thereby limiting the long-term sustainability of Lean transformation [2,3].**

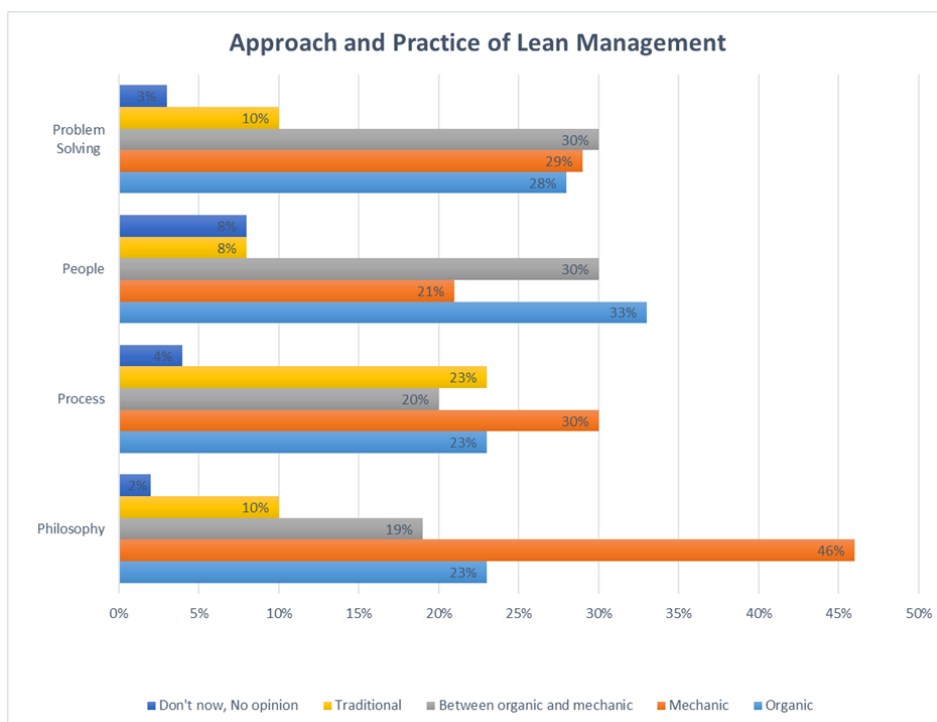
Process - No clearly dominant approach was identified within the **Process** dimension. Although the mechanical approach accounts for the largest proportion of responses (30%), the remaining categories show relatively similar distributions. This suggests that the company has successfully adopted many Lean tools and standardized processes; however, these practices do not appear to be fully supported by a shared organizational philosophy capable of ensuring long-term sustainability. **The relatively balanced distribution of responses indicates that process improvements have been implemented, but they are not yet fully integrated into a coherent Lean management system.** Previous research suggests that implementing Lean tools without embedding them within a broader organizational philosophy often leads to fragmented improvements rather than a fully integrated Lean production system [3].

Pepole - Within the **People** dimension, the **organic approach** received the highest proportion of responses (33%), indicating a positive orientation toward employee development and investment in human capital. **This finding supports studies emphasizing that employee engagement, leadership, and organizational culture are fundamental enablers of successful Lean implementation [2,4].** Nevertheless, the relatively balanced distribution across the remaining categories suggests that the strategic importance of employees as drivers of continuous improvement has not yet been consistently recognized throughout the organization. **Considering that the automotive-textile industry is highly labor-intensive, strengthening employee involvement, continuous training, and empowerment is essential for achieving sustainable Lean implementation.**

Problem Solving - The responses within the Problem Solving dimension reveal no dominant approach. The highest proportion of responses falls within the category between organic and mechanical (30%), while the mechanical (29%) and organic (28%) approaches are almost equally represented. This distribution indicates that problem-solving practices remain insufficiently integrated into a coherent Lean philosophy and highlights the need for a more systematic organizational approach to learning and continuous improvement. The absence of a dominant approach may reflect an incomplete Lean transformation, as previous studies have identified inconsistent problem-solving practices and insufficient organizational learning as common barriers to sustainable Lean implementation [5]. The absence of a clearly dominant approach may indicate that structured problem-solving methods are applied inconsistently across different organizational levels, reducing the organization's ability to achieve continuous improvement through organizational learning.



Overall, the results indicate that Lean management within the studied company is still predominantly perceived through a mechanical perspective, particularly in the dimensions of Philosophy and Process. Although the People dimension demonstrates a greater orientation toward the organic approach, the findings suggest that a stronger integration of Lean philosophy, organizational culture, and employee development is necessary to achieve sustainable continuous improvement and long-term organizational competitiveness.



**Figure 1:** Distribution of managerial perceptions of Lean management according to the four dimensions of the 4P model

#### 4. CONCLUSION

The findings indicate that the studied company demonstrates a predominantly mechanical orientation in the dimensions of Philosophy and Process, while the People dimension reflects a moderate organic orientation. In contrast, the Problem Solving dimension shows no clearly dominant approach, suggesting that Lean practices have not yet been fully integrated into a coherent management philosophy. Overall, the results indicate that Lean management is still perceived primarily as a technical system for improving operational



efficiency and reducing costs rather than as a comprehensive management philosophy that promotes continuous learning, employee development, and organizational culture. These findings are particularly significant because the company operates within the labor-intensive automotive-textile industry, where organizational performance depends largely on employees' knowledge, skills, motivation, and engagement. In such an environment, sustainable competitiveness cannot be achieved solely through process optimization and the implementation of Lean tools. Instead, long-term success requires the integration of Lean philosophy with organizational culture, leadership commitment, and continuous employee development.

The study confirms that strengthening the organic dimension of Lean management is essential for achieving sustainable organizational improvement. Developing a culture of continuous learning, teamwork, employee empowerment, and systematic problem-solving should become strategic priorities for organizations seeking to maximize the benefits of Lean implementation. As Liker emphasizes [1], *"Continuous improvement and respect for people are inseparable. Without people who are engaged and developed, continuous improvement cannot be sustained."* This principle reinforces the central finding of the present study that people represent the most important driver of successful and sustainable Lean transformation.

This research contributes to the understanding of Lean implementation within the automotive-textile industry by demonstrating that the balance between the technical and human dimensions of Lean remains a significant challenge in practice. The findings provide managers with practical guidance for designing Lean strategies that extend beyond process optimization and incorporate organizational culture, employee development, and long-term strategic thinking.

The study is limited to a single company, and therefore the findings cannot be generalized to the entire automotive-textile industry. Future research should include comparative studies involving multiple companies and different manufacturing sectors, as well as examine the relationship between Lean maturity, organizational culture, leadership, and business performance.

In conclusion, organizations seeking sustainable Lean transformation should move beyond a predominantly mechanical implementation of Lean and embrace its broader philosophy as a people-centered management system. Only through a balanced integration of Philosophy, Process, People, and Problem Solving can organizations achieve continuous improvement, long-term competitiveness, and sustainable organizational development.

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