LEAN MANAGEMENT – PRODUCTION PHILOSOPHY AND BUSINESS STRATEGY

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Abstract

Numerous business challenges steeped in market complexity, due to overall constraints of social and health issues manifesting in today's global world, posing a serious temptation to modern entrepreneurship. To overcome obstacles and barriers in a ˝lean˝ manner companies have to reflect efficiency, competitiveness and market segmentation to the greatest extent possible. Aim of this paper is to present how modern companies can use the so-called Lean Management to moderate quality and originality of innovative products, new communication relations with the market (consumers), manage issues that may undermine the harmony between production/service and consumer. Lean Management is considered one of the best systems for achieving business excellence, which encourages companies to adapt their business to market needs, meaning that traditional companies strive to organize business and production processes according to lean principles through the implementation of Lean Management. Research methodology is based on secondary research that statistically relate companies to constant investments in machinery, tools, people and work standardization. Research preview of this paper comprehends existing research meta-data to analyse Lean Management as a process of continuous improvement for identifying and eliminating those organizational elements that do not add value to the product. The implementation of Lean Management is a time consuming process that seeks continuous improvements that never stop striving for more efficiency. Results of this paper bring contemporary importance role of Lean Management in today's modern entrepreneurship that is dealing with global pandemic and new paths to the physically constrained consumers. Therefore, results of the research update the processes of implementing Lean Management, to confirm it as a "concept" of modern leadership and organization.

Keywords: *management, lean management, organization, implementation, leadership*

1. INTRODUCTION

Today, in the 21st century, companies increasingly have to adapt to market challenges in order to remain competitive, i.e. to meet the needs and desires of customers. The global crisis, globalisation and the COVID-19 pandemic are just some of the challenges that must be addressed in long-term strategic business plan of manufacturing or service, in regards to small, medium or large enterprises. Modern global markets require companies, if they want to remain competitive, to focus on customers, i.e. to achieve business excellence and to confront with crisis situations. In order for the company to minimize surplus stock, unnecessary steps, overproduction, sources of waste, limit business irrationality and achieve greater customer satisfaction, product quality, and also achieve continuous improvement with the use of minimal resources, Lean management should be implemented.

The name Lean comes from the English word meaning lean-slim, so Lean management is also called Slender Management. The name Lean was first introduced to the public in 1991 in the book "The Machine That Changed the World" by a group of authors - Jim Womack, Dan Jones and Daniel Roos. In the book, the authors describe Toyota's production system and call it "slender," due to the company's policy of eliminating waste and surpluses altogether in the manufacturing process (Worley, Doolen 2006, 229).

Lean management is defined as a business strategy based on needs and wishes of customers, delivering to them a quality product at the required price, quality and at the required time, provided that minimal resources are used during production (Reid, Sanders 2013, 231). Also, Lean management can be defined as a production philosophy that, when implemented into the production process, results in a decrease in

surplus stock, scrap, costs or anything that does not add value to the product/service and increase employee productivity, quality, flexibility and customer satisfaction (Cook, Graser 2001, 7).

Lean management's goal is to achieve the best possible results in the production process with the minimal use of resources, all in order to meet the needs and wishes of customers.

Accordingly, it can be concluded that Lean management is directed towards (Žvorc 2013, 696):

- customers - based on the needs and wishes of customers, goals are set, as well as production process strategies,
- continuous changes and improvement of the production process,
- spotting problems, but also the tendency to permanently eliminate them,
- innovation
- forming an organizational structure, determined during customer values,
- standardisation of work.

2. LEAN MANAGEMENT'S HISTORIC DEVELOPMENT

In order to better understand Lean management, its advantages and disadvantages, it is important to know the historical development of it. It is believed that the foundations and principles of Lean management were laid by Henry Ford (Lean Enterprise Institute 2020), while today's Lean management is credited to Kiichairo Toyoda, who founded Toyota Motor Company in 1930. With the desire to make cars available to more people, i.e. to reduce the price of car production, Henry Ford in 1913, noticing the efficiency of the conveyor belt in a meatpacking plant, implemented a conveyor belt into his own manufacturing plant and thus struck the foundations of mass (mobile) production in the automotive industry. Henry Ford divided the entire production process into production steps, which were further used by special machines to line up in production lines. In production, there were also control devices that eliminated faulty parts, all to speed up production and achieve greater correctness of the parts produced. The introduction of the conveyor belt resulted in shorter production times, lower costs and increased productivity and standardisation (Liqueur 2004, 21). Despite these positive effects, it could not meet the different requirements of customers and over time Ford began to loose its competitive position on the market.

During the 20th century, dominant American and European automakers achieved Ford's goal. Cars became available to more people. Since automotive production in Japan was unable to compete with dominant manufacturers, it was necessary to study them and try to implement the best production model in their own production processes. According to the conducted research, the American production model could not be implemented in Japan due to a lack of resources, land for production, but also space for storing cars and parts (Dekier 2012, 47).

In 1930, Toyota Motor Company founder Kiichairo Toyoda and chief engineer Taiichi Ohno came to the conclusion that it is possible to achieve continuous improvement, but also faster production flow and meet different market requirements through small and simple series of innovations in the production process. Toyota's experts revised and adapted Ford's original production concept to their own needs, resulting in the emergence of Toyota Production System - TPS (Bukša 2012, 22).

TPS is an integrated socio-technical system that effectively organizes production and logistics, including the interaction with suppliers and customers, minimizes costs and waste (Lean Six Sigma Definition 2012). The system works by delivering the manufactured product to the customer at a certain time, to a specific place and under certain conditions that suit him best, at minimal cost and without stockpiling. That is, a product that will not be purchased, there is no need to produce. In short, it is a philosophy and a system of thinking, i.e. a return of value towards customers, workers, company assets and society as a whole.

Accordingly, TPS is based on two main conceptual pillars, namely (Lean Six Stigma Definition 2012):

- **Just-in-time** - the concept is based on the production of what needs to be done, when it needs to be and in what quantity it should,
- **Jidoka** - the concept is based on automation with human intelligence. It ensures that the process will automatically stop or the worker will stop it himself if there is an irregularity in production with the aim of increasing the quality of the product and reducing costs.

In the late 1980s, in 1988, the term Lean was first mentioned at the Massachusetts Institute of Technology, where scientist John Krafcik researched and compared International Motor Vehicle Program - IMVP. At that point, between 36 automotive companies and their manufacturing processes, the most effective was the Japanese production system, namely Toyota's production system - TPS. The entire study was brought closer to the public in 1991 in the previously mentioned book "The Machine That Changed the World" which described the differences between the most efficient production of TPS and the production of the Western automotive industry at the time and for the first time link the term Lean to the TPS (Womack, Jones, Roos 2007, 55).

Nowadays, Toyota is considered one of the world's most successful companies applying Lean management in manufacturing. Company dominance in the market, high quality products, but also willingness to innovate (leading in hybrid technology), are just one of the indicators of the successful application of Lean management. Owners of global companies, as well as managers, are constantly focused on perfecting knowledge about Lean management because today it does not only apply to production, but can also be applied in service activities, state administration and even in health care.

In the Republic of Croatia, the first conference on Lean management was held in Zagreb in 2011, and the main organizer was the Lean management initiative. In addition to the biggest managers of Croatian companies such as Ina, Podravka, Končar, Coca Cola, etc., the conference had the honour of hosting Dr. Sc. Michael Balle, two-time winner of the Shigeo Shingo Award for Lean Management Works (Hren, Hren 2014, 4).

3. TRADITIONAL MANAGEMENT VS. LEAN MANAGEMENT – CHARACTERISTIC OF ACTIVITY IN COMPANIES

Lean management is also called slender because it uses a minimum of resources to produce products as needed and desired by customers as opposed to mass production. Toyota's business model is based on two core pillars of Lean management, namely (Larman, Vodde 2009, 8):

- continuous improvement,
- respect for people.

Continuous improvement is considered the basic principle of work, as well as a constant challenge, all with the aim of creating additional value of the product/service. Respect for people applies to both employees and suppliers, and also customers. It is important to note that these "pillars" of improvement work in synergy in order to produce a quality product, i.e. a product according to the requirements of customers with minimally realized losses (Prester, Ivanko 2011, 107).

The main features of Lean management are the following:

- the pursuit of continuous improvement,
- orientation to the process,
- business process management,
- orientation towards customers.

Lean management's main task is to identify in which step of the production process creates additional value for the customer and in which it does not. The aim is to investigate whether a step that does not create additional value in the production process is necessary, but also to determine how much mutually synchronised the steps are, how flexible, and how much they correspond to the business itself (Žvorc 2013, 697).

In the context of this, the differences between the "concepts" of the traditional vs. Lean company are evident. Modern markets characterized by sudden and rapid changes with an uncertain and turbulent environment encourage traditional companies, focused on mass production, to move to a modern way of working that is directed towards the needs of customers. Simply put, the competitiveness of companies today can hardly be sustainable without the application of Lean management. That is why governments today of the most developed countries in the world such as the United States, Japan and Germany continuously invest considerable funds in order to implement Lean management in all segments of society.

The table below shows a comparison between traditional and Lean enterprises.

Table 1. Comparison of traditional and Lean enterprises

Traditional company	**Lean Enterprise**
Features	**Features**
Mass production	Small series
Large-scale economy	Identification and use of competitive advantages
Strict division of jobs	Standardization of jobs
Hierarchy and listening to commands	Development of individual initiative and teamwork
Reactive sales policy	Proactive sales policy
Control mechanisms	Championship features and characters
Orientation	**Orientation**
By Product	According to customer
According to the budget	According to demand
By Functions	According to the process
Quality based on inspection	Product-embedded quality

Source: Žvorc, M. (2013) Lean menadžment u neproizvodnoj organizaciji; Online: https://hrcak.srce.hr/116466

By looking at the table, significant differences can be observed between the characteristics and orientation of the traditional and Lean enterprises.

Differences between traditional and Lean companies occur, among others, in how to set product/service prices. Below are ways to set prices of products/services in a traditional and Lean company.

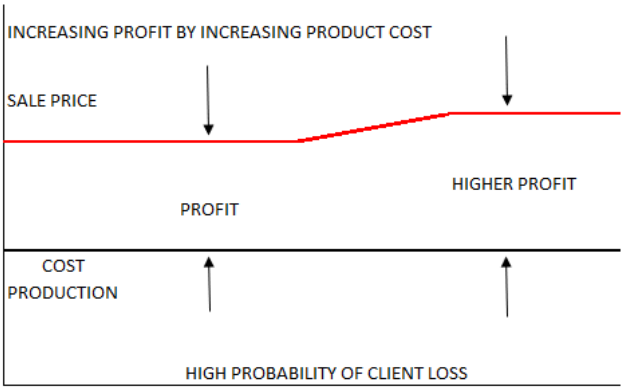


Figure 1. Creating a product/service price in a traditional company

Source: Štefanić, N., Tošanović, N. (2012) Upravljanje znanjem i promjenama - Lean proizvodnja; Online: https://www.fsb.unizg.hr/atlantis/upload/newsboard/10_05_2012__16882_UZIP_-Lean_proizvodnja.pdf

Traditional companies have set the price of the product/service in such a way that they have added to the production costs the profits they want to make. With the increase in production costs, the price of the product itself also grew.

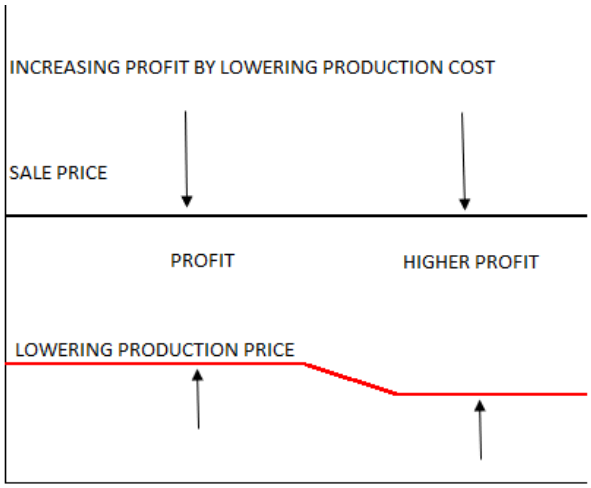


Figure 2. Creating a product/service price in Lean Company

Source: Štefanić, N., Tošanović, N. (2012) Upravljanje znanjem i promjenama; Online: https://www.fsb.unizg.hr/atlantis/upload/newsboard/10_05_2012__16882_UZIP_-_Lean_proizvodnja.pdf

Today, the prices of products/services are determined by the market and Lean company does not have any influence in creating them. Profits are defined as the difference in the price of products/services created on the market and production costs. Accordingly, in order for a Lean company to remain competitive, make a profit and avoid loss-making operations, it must reduce the price of the production itself.

Furthermore, employees are also treated differently in traditional and Lean enterprises. Lean company employees are seen as capital and potential and are constantly invested in improving their knowledge and skills, all to contribute to the development of the company. The traditional company sees employees

as a cost and does not invest in knowledge or in the skills of employees, but only occasionally invests in certain experts/managers.

Lean management encourages both teamwork and project approach, while the quality of products is achieved in advance in the production process according to the needs and wishes of customers.

There is also a big difference between the plant and the equipment that companies use when manufacturing. While traditional companies use automated, expensive and large machines and equipment, Lean companies use small, more flexible machines and equipment when manufacturing that are not only oriented towards the production of one type of product. It is important to note that it is in the interest of the traditional company to surpass the competition, reduce costs, but also increase the efficiency of production, while Lean management is focused on meeting the needs and wishes of customers, eliminating losses, but also adding value to the finished product. When solving problems within Lean companies, the question "What is the solution?" will be asked, while the question "Who is to blame for the problem?" will be asked in the traditional company. (Dotilić, Erceg 2016, 8).

In a traditional company, 90-95% of activities do not add value to the product/service (of which 35% relate to necessary activities that do not add value, while 60% relate to activities that are not necessary and do not add value), while activities that add value to the product make up only 5-10% of the production process. Traditional philosophy is focused on increasing activities that add value to the product, but as a result there are new losses and an even higher level of activity that does not add value to the product. Lean philosophy puts emphasis on activities that do not add value to the product because it is precisely by identifying and eliminating losses that the percentage of activities that add value to the product increases (Štefanić, Tošanović 2010, 22).

The difference between a traditional and Lean enterprise can also be seen by the style of management. Namely, managers of traditional companies believe that their team should meet the needs and wishes of customers. They do not encourage the distribution of work among employees, while in the Lean's manager's job description allocation comes first. During the conflict, the traditional manager will not discuss the reasons for the conflict and if it is possible to avoid any discussion, while the manager at Lean company will try to resolve the conflict because he believes that a comfortable working atmosphere greatly affects productivity. Every problem in lean enterprise will be used to improve the production process, while the traditional manager will ignore the same (Campos, Slegel, Villar 2011, 70).

4. LEAN MANAGEMENT IMPLEMENTATION

When it comes to the implementation of Lean management in companies, it should be kept in mind that these are radical changes that, in order to achieve success, require the participation of all employees. While this is a change within the company itself, it is constantly striving to expand and improve beyond said company. Lean management during implementation should achieve efficiency in the production process, i.e. production in accordance with market requirements. In order to establish such a production process, lean management tools need to be used.

The process of implementing Lean management can be divided into two activities, namely (Piškor, Kondić, Mađarić 2011, 106).

- activities needed to start implementing Lean Management,
- lean management implementation activities.

Each of these activities includes its own steps, i.e. the stages of realization of the activities itself, visible from the following table.

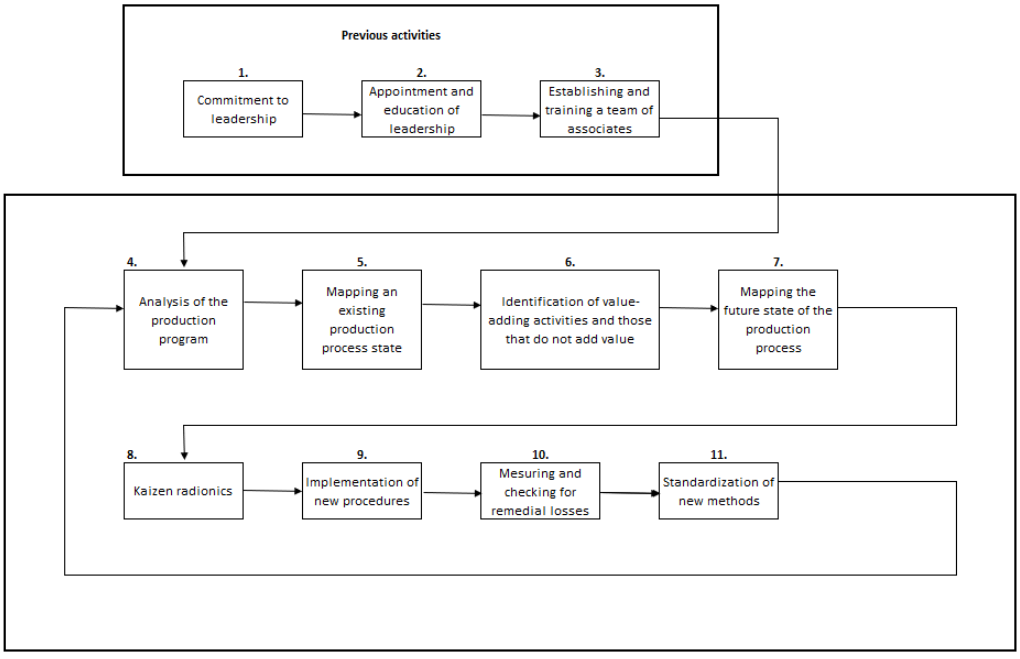
Table 2. Lean Management Implementation Process Activities

Activities needed to start deployment	Concrete implementation activities
1. commitment to leadership, 2. appointment and education of leadership, 3. establishing and training a team of associates	1. analysis of the production program, 2. mapping an existing production process state, 3. identification of value-adding activities and those that do not add value, 4. mapping the future state of the production process, 5. Kaizen radionics, 6. implementation of new procedures, 7. measuring and checking for remedial losses, 8. standardization of new methods

Source: Made by author of the paper

There is no doubt that each of these activities has its own specific weight and importance, from whose concretization lean management itself certainly gets its complete confirmation, and therefore the efficiency of business processes is argumented and established. All these stages of realization that are expressed through certain activities of the process of implementation of Lean management can be manifested and realized only if the process is managed by Lean leadership, which has new cognitive moments in managing and handling the business processes of its business systems, i.e. business entities.

Below is a scheme 1. activities that are necessary in order to successfully implement Lean management.



Scheme 1. Activities for lean management implementation

Source: Piškor, M., Kondić, V., Mađerić, D. (2011) Proces implementacije Lean-a u malim organizacijama; Online: https://hrcak.srce.hr/85804

5. LEAN LEADERSHIP

One of the keys to the successful implementation of Lean management is considered a well-organized leadership system, because the former traditional leadership styles have proved ineffective for the business of modern enterprises. In traditional leadership styles, the employee was seen as a cost and the company did not invest in his education. Today's forms of leadership are aimed at achieving satisfaction among employees, with achieves greater motivation that results in productivity. In short, Lean's leader must achieve a culture of continuous improvement and respect for employees through constant education, but also by clearly defining vision, missions and goals. Lean leader must also have a wide knowledge of Lean tools, that is, he must be able to identify which tools need to be applied in order to achieve constant improvement of the business. According to Ljungblom (2012, 55)

Lean guidance consists of 4 components that can be applied in any company:

- **charismatic leadership - the** manager is seen as a role model, his decisions are respected, and employees want to be in his position,
- **inspirational motivation** - leaders motivate employees by sharing their visions and goals with them, all in the spirit of teamwork,
- **intellectual stimulation** - employees are encouraged to be innovative and creative and reflect, all in order to achieve improvement of the production process,
- **respect for individuality** - each employee is approached individually and encouraged communication with him.

If he wants to become a successful Lean manager, i.e. Lean's leader, he must pay attention to the following (Dekier 2012, 49):

- **good atmosphere** - achieving a good workplace atmosphere makes it easier to perform daily tasks and the relationship between employees is healthier,
- **setting short- and long-term** goals - when employees are familiar with the situation in the company, when performing their daily tasks they become more efficient,
- **communication** - good communication, but also the exchange of information must be achieved at all levels of the company,
- **internal motivation - one** of the most important tasks is certainly to motivate employees on an individual level, all in order to achieve long-term results,
- **consultation** - any idea and opinion of employees in the company is welcome when solving the problem.

When exploring the different approaches to Lean leadership, Domrowski and Mielke (2013, 570) performed 5 basic approaches that must be adequately valorized, but also implemented:

- **culture of continuous improvement** - in order to achieve continuous improvement, long-term thinking needs to be achieved. Every problem and failure should be seen as an opportunity to solve errors. Mistakes in the production process will always occur, but it is up to the leadership to possess the knowledge and skills to avoid them. The manager has a big role to play in this element because he has to encourage the development, but also the education of employees,
- **personal development** - the manager should assess the need for his own investment in education as well as in personal development and the need to invest employees. Also, the manager should be able to look at the situation from the customer's perspective in order to be able to better define the production goals,
- **qualifications** - applies to both managers and employees. In addition to the qualifications acquired through regular education, employees must be constantly improved through various educations. In order to encourage employees to think, different challenges are imposed on them every day, as well

as problem solving. The individual way of developing each individual employee should also be encouraged, according to predetermined long-term plans,

- **Gemba -** or the place where the deals take place. Managers should communicate and solve problems with employees in the place where production takes place, not in the meeting room, since all decisions are based on facts. On the spot should also be reacted and learned. That is, as little time as possible should be spent on the creation of education materials,
- **Hoshim Canaries -** or planning system in Lean enterprises. The term Hoshim Canari means defining goals and strategies based on the mission and vision of the company, defining productivity, efficiency and transferring information between all levels of the company. Every employee needs to understand their role in achieving their goals and strategies. The responsibility of this element falls on senior management, and implies the coherence of long-term goals and activities of teams.

Accordingly, it can be concluded that Lean is the leader of the person who needs to eliminate all problems that affect the production process, is the creator of new values (in new products/services - innovations, new technological solutions, new process or organizational models, new markets), is a motivator that mobilizes and motivates employees, but also an initiator that encourages continuous improvement (Hines 2009, 26). Lean guidance begins at the top of the organization of the enterprise, represents a permanent, generated process that is eventually implemented on all components and levels within the company structure itself.

6. CONCLUSION

Historically, from the very beginning of the introduction of the concept of Lean management in scientific and professional terminology (30 years ago), as well as the application of its foundations and principles, postulates and procedures into modern business practice, a certain, relatively serious time has passed (over 100 years) which, unfortunately, has not left a significant reflection in terms of acceptance and implementation of it by numerous business entities – at least this is evident from Croatian business practice. It could be said that this production philosophy, i.e. business strategy is more talked about in theory itself than its representation and implementation in real practice itself. There is no doubt that the frequency of lean management application in the world, and in the business entities of the Republic of Croatia itself should be higher, since this "concept" generates numerous advantages, savings, innovations, increases the productivity and efficiency of companies, directs greater business involvement and satisfaction of employees and promises greater profitability.

In today's modern and extremely thorny and dynamic, confrontational environment within which many countries have recently gone through their transitional processes, seeking their social and economic solutions in order to transform their national competitiveness, as well as the competitiveness of each business entity individually, the view is advocated that the "concept" of Lean management should be used to a greater extent as a recipe and recommendation for concrete solutions, improvements and betterments. The aspiration towards business excellence must be the goal and determination of each individually, every business entity, every national economy, and Lean management gives systematicity and represents the determination of such a development, embodying the business spirit of the company. Lean management is a solution that defines and formats our present, especially our future by allowing and respecting all freedoms of its operation and designation.

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