LEAN MANAGEMENT APPROACH FROM CONTEMPORARY MANAGEMENT **APPROACHES**

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DOI: https://doi.org/10.56293/IJMSSSR.2022.4547

IJMSSSR 2023 **VOLUME 5** ISSUE 1 JANUARY - FEBRUARY

Abstract: In this study, it is aimed to evaluate the studies conducted between 2010-2020 in the field of lean management. The data used in the study were obtained by writing the word group of "lean management" in google academic. In this context, 137 published studies were analyzed. The majority of the reviewed studies (54.7%) consist of articles, then master's and doctoral theses. When the distribution of the studies by sector is examined, it is observed that the samples and applications are mostly focused on the private sector. Most of the studies associated with situation reports, and survey application. Some of them include new model suggestions. Considering the results obtained from the study, it can be said that the studies in the field of lean management in our country are not sufficient. Thus, new studies should focus on survey applications and new model suggestions in order to make a contribution to the "lean management" literature.

Keywords: Lean, Lean applications, Lean management

1. INTRODUCTION

Since the second half of the twentieth century, there have been great changes in management approaches. With the increase in complexity in management processes, attempts to change management approaches have increased and contemporary management approaches have been developed (Demirtas and Yayla, 2021). Lean management is one of these contemporary management approaches. is one.

Lean management is a management approach that emerged as a product of lean thinking. Lean thinking; It is a management approach that includes principles such as value, value stream, and excellence (Deran and Beller, 2014: 163) that will contribute to the realization of the primary objectives of enterprises such as meeting customers' requests and expectations, not compromising on quality, and improving processes (Gök and Ancı, 2016: 136). The use of lean management seems to be the preferred way of enterprises in order to meet the everevolving expectations in a dynamic environment.

Lean management is considered as a systematic approach and is a type of management that emerged and developed in Japanese production systems. In addition to the efforts to identify waste in production processes, increasing quality and efficiency are among the principles of lean management. Lean management approach is about performing effectively and thus increasing customer satisfaction (Sakalli and Çitr, 2018: 474).

In recent years, there has been an increase in the number and scope of studies on lean management (Batumlu, 2021). In this study, it is aimed to examine the studies conducted in the field of lean management between 2010-2020. For this purpose, master's, doctoral theses and articles were reached. The main purpose of this study is to raise awareness about the concept of Lean Management and related practices and to reveal its applicability across sectors.

ISSN: 2582 - 0265

The study is basically divided into 2 parts, consisting of tables showing the total Lean Philosophy, Lean Management and Working findings. In the first chapter, Fishbone Technique, Value stream maps, Business Standardization, Kaizen, 5S Technique, Kanban, Red Label Technique, 5 (Five) Reason Analysis techniques are explained.

This study is especially important in terms of providing information on the number and quality of studies on lean management in our country. Again, in the light of the data obtained from the study, it will be possible to have an idea about whether the studies at the master's and doctorate level are sufficient. In addition to these, this study is important in terms of providing explanatory information about the positive and negative aspects of businesses that do not adopt this management approach, considering the situations of businesses that have adopted the lean management approach.

1.1. Lean Philosophy and Lean Management

In the literature, lean is defined almost exclusively as a set of waste identification and elimination tools. "Just use these tools, productivity will increase and your organization will be lean." Organizations have discovered that the role of management in process improvement is crucial. It is a systematic and multi-focused approach to guiding the employee. It is also defined as the learning, training and application of lean principles and philosophies across an enterprise. Lean management includes: both an individual and collective organizational transformation plan for the dissemination of the lean education system, the lean sociotechnical system (belief system) and the lean change management system (Charron, Harrington, 2014: 4).

Lean management approach is based on efforts to abandon initiatives that do not create value. In other words, the main goal is to prevent waste and ensure continuous improvement (Can and Güneşlik, 2013: 2). Lean management principles are also shaped within the framework of this stated purpose. There are four basic principles of lean management thought and they are listed as follows (Womack and Jones, 1996:5):

- The basic principle is to create customer value.
- Another principle of lean management is flow and value flow. Accordingly, efforts should be made to create a continuous flow of business and to eliminate flows that do not create value for the customer.
- Another principle of lean management is traction. The creation of the production system by arranging the stocks and taking the central position of the customer requests expresses this principle.
- Another principle of lean management is excellence. Accordingly, in lean management, attempts should be made to ensure continuity in lean processes and thus to obtain excellent results.

The path followed in the problem solving process is such as to give an idea about the basic principles of lean management. Figure 1 gives information about the content of Toyota's problem solving process.

Standardise successful processes

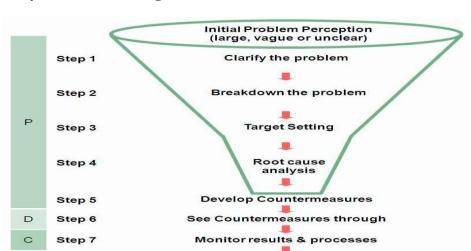


Figure 1Toyota Problem Solving Process

Step 8

Source: Aydın, H. (2018). A research on the effects of lean management approach on employee motivation and service quality (Thesis No. 529150) [PhD Thesis, Istanbul Gelişim University], p. 46.

In Toyota-style problem solving, the way the problem is perceived is aimed at evaluating it as a complex problem. At the point of clarifying the problem, there is an approach in the form of a real problem. In order to determine the cause of the problem, an effort is made to understand the situation by conducting an impact investigation in addition to the "why" and "why" questions. Taking countermeasures in the problem solving process, which continues with the identification of the causes at the root of the problem, constitutes another stage. Other stages in the Toyota problem-solving process are "evaluation" and "standardisation". Achieving a standard for problem solving has the potential to provide multi-faceted benefits as problems are solved effectively and a style that identifies with the business.

Some of the tools and techniques used in Lean Management are eight and listed below. These:

Fishbone Technique, Value stream maps, Business Standardization, Kaizen, 5S Technique, Kanban, Red Label Technique, 5 (Five) Reasons Analysis techniques.

a. Fishbone Technique

The fishbone technique is used to identify factors causing a problem. The diagram allows to see the causes of the problems that affect the result. For this reason, it is also used as a cause-effect diagram. During the solution of the problems encountered in production according to the fishbone technique, the human factor, methods, tools or machines, materials, measurements and the environment should be examined while searching for the causes of the problems. In service-related problems, the product, suppliers, safety, skills and environmental factors should be examined (Seker, 2014).

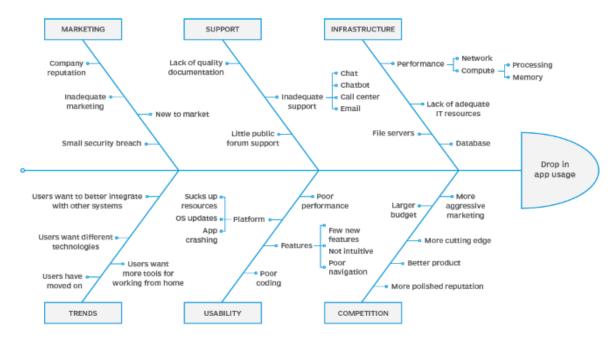


Figure 2. Fishbone diagram

(Seker, 2014).

b. Value stream maps

Value stream maps are a method that allows observing the activities that create and do not add value along the flow from a holistic point of view in order to see the processes in the environment and to learn the factors that cause waste. In this method, activities that do not create value are eliminated.

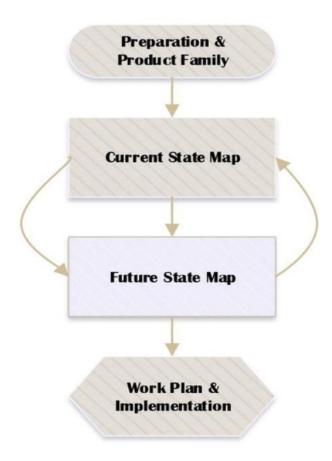


Figure 3. Value Stream Maps Method and Application Steps

(Rother ve Shook, 1999)

c. Business standardization

Job standardization allows operations to be performed in the same way by everyone. Ensuring work standardization, which is among the improvement techniques, will increase productivity. For work standardization to occur, waste (3M) must be eliminated. Muda, a resource-intensive, wasteful application that does not create any value for customers, causes overload with more force, longer use and higher performance Muri and so-called nonsmooth operation, which causes operators to rush or wait. Mura needs to be eliminated (Chandra and Noya, 2014). When waste is eliminated, the efficiency of job standardization will be increased (Figure 4).

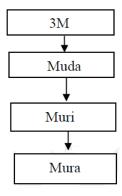


Figure 4. 3M Elements

(Muda, Muri, Mura)

d) Kaizen

"Kaizen", which consists of Japanese words meaning "kai" (Change) and "zen" (Better), means "continuous improvement" (Özçift, 2010). Employees in the kaizen technique, which is one of the methods used in the just-intime production system, can increase the quality thanks to continuous improvement methods and make efforts in this direction. Employees offer solutions and suggestions by thinking about how they can solve problems better and faster. Three things are required to perform Kaizen. The first of these is to find the current situation insufficient and to be able to realize the problems as in the fishbone technique. The second is to develop the human factor. Third is the widespread use of problem solving techniques. The most important thing in this process is to find the root of the problem. For this, it is recommended to use Pareto and cause-effect diagrams. The purpose of this method is to reset the errors and increase the quality, reduce the costs and shorten the processing time (İmai, 1999).



Şekil 5. Kaizen Umbrella

(Imai, 1986)

e) 5S technique

5S management takes its name from the first sounds of the following Japanese words from the technician who is used in the just in time production system (Just in Time = JIT) (Erol, 2012):

- Seiri (Extraction)
- Seiton (Edit)
- Seiso (Cleaning)
- Seiketsu (Standardization)
- Shitsuke (Maintenance and Development)

As can be understood from the words above, the 5S technique is a technique developed to ensure that the working environment is clean, safe and the work done is satisfactory (Özçift, 2010). This technique is the most effective method used to ensure continuity. The main objectives of the 5S technique are to minimize work accidents, costs and waste, to increase efficiency, work safety and quality, and to ensure the effective use of production areas. The 5S technique also enables the identification and revealing of problems (Keleş et al., 2013).

f) Kanban

"Kanban", which is among the techniques used in JIT philosophy, is a set of systems that emphasizes some of the questions in the 5 N rule (what, when, where and how much). The dictionary meaning of "kanban", which was first developed by Toyota Motor Company, is "card". This card is the registration tool that contains the product information. Kanban cards are mostly rectangular and mostly contain the following information (Ercan, 2013):

- Where it is used
- Part number
- Track name
- Description of the part
- Kanban number
- Number of pieces/Kanban ratio
- Identification code number of the box in which the kanban is regularly put
- The location of the workstation where the kanban will be delivered

With the kanban method, it is aimed to prevent overproduction and to eliminate or reduce waste. This method is essentially a scheduling method that aims to control the material, i.e. production, and push and pull systems are used while providing control (Figure 6-7)

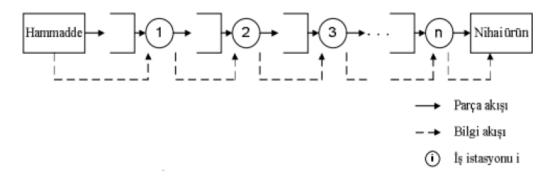


Figure 6. Parts and information flow in the Kanban push system

(Altun ve Göleç, 2011).

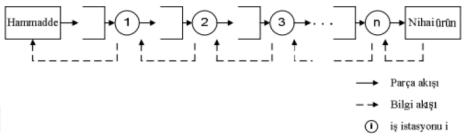


Figure 7. Part and information flow in the Kanban pull system

(Altun ve Golec, 2011).

g) Red Tag Technique

This method is a method used to identify excess or expired products. After the red label is used, the unnecessary ones are eliminated by classification. The remaining materials are stored. Since unnecessary materials are determined with the red label method, waste is also avoided (Çakırkaya and Acar, 2016).

The Red Label method is a technique that helps us identify excess or overdue products. After using the red label, classification is made and unnecessary ones are destroyed. The remaining materials are stored. Thanks to the red label, unnecessary materials are detected and wastage is avoided. The operation of this technique is as follows: Unnecessary materials are determined by the red label method, and the label fulfills the task of reminding (Çakırkaya and Acar, 2016).

h) 5 (Five) Cause analysis

The main purpose of the 5-cause analysis is to go to the root of the problem and to identify the root causes and to solve the problems. "Why?" The question is asked and the process continues. After the problems are identified, it is aimed to reach a solution. When using this method, problems are detected first. Then, the process continues until the root cause is reached in the form of first, second and third causes (Balcı, 2011).

Method

Sample

To be used in the study, the "lean management" word group was written in google academic and postgraduate studies in the field were scanned. For this purpose, the period of 2010-2020 was scanned and as a result of the scanning, 137 studies were reached. Inspired by the studies of Hunter and Schmidt (2004) and Card (2012), all the information and data in the studies that were decided to be used in terms of convenience within the scope of the research, a coding form was created in accordance with the purpose of the research. For each study included in this template, variables such as the name of the study, author/authors, type of publication (master's/doctoral thesis, article, oral presentation), year of the study, in which sector, methodological information, effect size (correlation coefficients), are included. given.

This study does not require ethics committee approval.

Results

The distribution of studies including studies on lean management by years, type of publication, and the sector in which they are made is presented in Table 1-3, respectively. A total of 137 studies were analyzed between 2010 and 2020 (Table 1).

Table 1. Distribution of studies on lean management by years

Year of Study	Frequency	Percentage	
2010	13	9,5	
2011	11	8,0	
2012	13	9,5	
2013	8	5,8	
2014	7	5,1	
2015	12	8,8	
2016	13	12,3	
2017	11	8,0	
2018	17	12,4	
2019	19	13,9	
2020	13	9,5	
Total	137	100	

Of the reviewed studies, 75 (54.7%) were articles, 46 (33.6%) were master's thesis, 10 (7.3%) were doctoral thesis, and 6 (4.4%) were oral presentations (Table 2).

Table 2. Distribution of Included Studies by Publication Type

Working Type	Frequency	Percentage	
Master Thesis	46	33,6	
PhD Thesis	10	7,3	
Article	75	54,7	
Oral Presentation	6	4,4	
Total	137	100	

When the distribution of the studies by sector is examined, it is seen that 46% of them are done on the private sector, 30.7% on the public sector, and 23.3% on the private and public sectors (mixed) (Table 3).

Table 3. Distribution of Included Studies by Sector

Distribution by Sector	Frequency	Percentage
Public	42	30,7
Special	63	46,0
Mixed	32	23,3
Total	137	100

Imprint information of the studies included in the study is presented in Table 4.

Accordingly, it is seen that the current situation is evaluated in most of the studies, surveys are applied in 22 studies, and new model proposals are presented in 23 studies.

Table 4. Identity of Included Studies

Study	Publication Type	Method
Alaca (2010)	Master Thesis	Case Study
Keskin (2010)	PhD thesis	Case Study
Hürmeydan (2010)	Master Thesis	Case Study
Çankır (2010)	Master Thesis	Survey
Taşçı (2010)	Master Thesis	Literature Review - Comparison
Ertaş ve Aslan (2010)	Article	Literature Review
Türkan (2010)	Article	Literature Review
Gerger ve Demir (2010)	Article	Case Study
Özçelik ve Ertürk (2010)	Article	Literature Review
Salah ve ark. (2010)	Article	Literature Review
Beauvallet ve Houy, (2010).	Article	Compilation
Todoruţ ve ark (2010)	Article	Literature Review
Minami ve ark. (2010)	Article	Model Suggestion
Konur (2011)	Master Thesis	Model Suggestion
Alpan (2011)	PhD thesis	Model Suggestion
Meriç (2011)	PhD thesis	Case Study
Balc1 (2011)	Article	Literature Review
Özdemir ve Tekoğlu (2011)	Article	Model Suggestion
Aktaş ve Karğın (2011)	Article	Model Suggestion
Alves ve ark (2011)	Article	Current Situation Assessment
Soriano-Meier ve ark. (2011)	Article	Relational Scan
Edwards ve Nielsen (2011)	Oral Presentation	Relational Scan
Sacadura ve Tenera (2011)	Article	Model Suggestion
Bhamu ve ark. (2011)	Oral Presentation	Model Suggestion
Güleryüz (2012)	Master Thesis	Current Situation Assessment
Güneşlik (2012)	PhD thesis	Model Suggestion
Türkkantos (2012)	PhD thesis	Model Suggestion

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Erdem ve Aksoy (2016) Article Case Study Analysis Nihal ve ark. (2016) Article Current Situation Assessment	Ilkım ve Derin (2016)	Article	Literature Review
Nihal ve ark. (2016) Article Current Situation Assessment	Gök ve Ancı (2016)	Article	Literature Review
	Erdem ve Aksoy (2016)	Article	
	Nihal ve ark. (2016)	Article	Current Situation Assessment
Kadarova ve Demecko (2016) Article Literature Review	Kadarova ve Demecko (2016)	Article	Literature Review
Nowotarski ve ark.(2016) Article Case Study	Nowotarski ve ark.(2016)	Article	Case Study
Biazzo ve ark. (2016) Article Literature Review	Biazzo ve ark. (2016)	Article	Literature Review
Kwiatkowski ve ark. (2016) Article Literature Review	Kwiatkowski ve ark. (2016)	Article	Literature Review
Bulut (2017) Master Thesis Survey	Bulut (2017)	Master Thesis	Survey
Gürer (2017) Master Thesis Survey	`	Master Thesis	Survey
Dodanlı (2017) Master Thesis Literature Review	Dodanlı (2017)	Master Thesis	Literature Review

Nguema (2017)	Master Thesis	Survey
Kaygusuz (2017)	PhD thesis	Model Suggestion
Öztürk ve Elevli (2017)	Article	Literature Review
Öksüz ve ark. (2017)	Oral Presentation	Current Situation Assessment
Süzen ve ark. (2017)	Article	Literature Review
Sanders ve ark. (2017)	Oral Presentation	Current Situation Assessment
Bhutta ve ark. (2017)	Article	Current Situation Assessment
Nadal (2017)	Article	Literature Review
Geçgil (2018)	Master Thesis	Current Situation Assessment
Uzunovic (2018)	Master Thesis	Model Suggestion
Söyü Eren (2018)	Master Thesis	Model Suggestion
Çakıroğlu (2018)	Master Thesis	Model Suggestion
Özkan (2018)	Master Thesis	Survey
Durur (2018)	Master Thesis	Current Situation Assessment
Erusta (2018)	Master Thesis	Survey
Antep (2018)	PhD thesis	Survey
Erdem (2018)	Master Thesis	Survey
Aloğlu (2018)	PhD thesis	Model Suggestion
Cilhoroz ve Arslan (2018)	Article	Literature Review
Sakallı ve Çatır (2018)	Article	Model Suggestion
Kaldırım ve Kaldırım (2018)	Article	Literature Review
Mayr ve ark. (2018)	Article	Literature Review
Abu Salim ve ark. (2018)	Article	Current Situation Assessment
Bacoup ve ark. (2018)	Article	Model Suggestion
Salim ve ark. (2018)	Article	Survey
Tinaz (2019)	Master Thesis	Literature Review
Yeşilbaş (2019)	Master Thesis Master Thesis	Current Situation Assessment
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Topbaş (2019) Eneim (2019)	Master Thesis Master Thesis	
Temür (2019)	Master Thesis Master Thesis	Survey Current Situation Assessment
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Alkan (2019)	Master Thesis Master Thesis	Model Suggestion Current Situation Assessment
Karali (2019)		
Çobanoğlu (2019)	Master Thesis	Model Suggestion
Akgül (2019)	Master Thesis	Survey
Bakan (2019)	Master Thesis	Model Suggestion
Yangınlar ve Bal (2019)	Article	Literature Review
Bıkmaz (2019)	Article	Survey
Çınar ve Ekinci (2019)	Article	Survey Covered Situation Assessment
Tanyıldızı ve Demir (2019)	Article	Current Situation Assessment
Toker ve ark. (2019)	Article	Model Suggestion
Meng (2019)	Article	Literature Review
Parkhi (2019)	Article	Literature Review
Isfahani ve ark. (2019)	Article	Literature Review
Topaç (2020)	Master Thesis	Current Situation Assessment
Denizli (2020)	Master Thesis	Survey
İzci (2020)	Master Thesis	Survey
Yeke (2020)	Master Thesis	Current Situation Assessment
Tandoğan (2020)	Master Thesis	Survey
Külekçi (2020)	Master Thesis	File Scan
Tanyıldızı (2020)	PhD thesis	Current Situation Assessment
Bayar (2020)	Article	Survey
Çilhoroz ve Çakmak (2020)	Article	Literature Review

Şantaş (2020)	Article	Literature Review
Saxby ve ark. (2020)	Article	Literature Review
Ku ve Lin (2020)	Article	Survey
Maldonado ve ark. (2020)	Article	Literature Review

2. Conclusion

Since the second half of the twenty-first century, radical changes have taken place in the understanding of management. Due to the increase in complexity in management processes, attempts to seek new management understandings have also gained momentum, and as a result of these initiatives, contemporary management approaches have been developed (Demirtas and Yayla, 2021). Lean management is one of the contemporary management approaches.

When other studies on lean management approach are examined, it is seen that it affects productivity and productivity positively in almost every sector (Eyel and Denizli, 2021). In another study, it was concluded that lean management approach affects organizational trust and organizational identification positively and significantly (Özer, Özkan, & Özmen, 2021).

Although many researches have been done in the field of lean management in Turkey, it is seen that the studies are insufficient. In this study, studies in the field of lean management between the years 2010-2020 were examined. In this study, in which a total of 137 studies were examined, 75 (54.7%) of the studies were articles, 46 (33.6%) were master's thesis, 10 (7.3%) were doctoral theses, and 6 (4.4%) were oral. it was a statement.

When the distribution of the studies by sector is examined, it is seen that 46% of them are done on the private sector, 30.7% on the public sector, and 23.3% on the private and public sectors (mixed).

Imprint information of the studies included in the study is presented in Table 4. Accordingly, it is seen that the current situation is evaluated in most of the studies, surveys are applied in 22 studies, and new model proposals are presented in 23 studies.

Considering the results obtained from the study, it shows that although the concept of lean management is not new, the studies in our country are not sufficient, especially in health, IT services and public administration and it is necessary to focus on lean management studies in this field of health. Lean Management Approach, which is inevitable for all sectors, will contribute greatly to the employment of our country, especially in the health sector. It is an extremely important issue in terms of efficiency and effectiveness by saving time and effort in all areas from radiology units to quality management, from services to intensive care. Moreover, it can be said that new studies should be focused on survey studies and new model proposals. The fact that the study covers only the studies between the years 2010-2020 and is only scanned in the google academic search engine constitutes the limitations of the study.

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