LEAN THINKING IN LEGAL SYSTEMS

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ÖZET

Yalın düşüncenin kökleri Toyota üretim sistemine dayanmaktadır. Üretim işletmeleri, yalın düşünce ilkelerinin uygulanması ile değer katmayan faaliyetlerinden kurtulmuş, verimliliklerini artırmış ve maliyetlerini düşürmüştür. 2000'li yıllardan itibaren yalın düşünce ilkeleri hizmet işletmeleri tarafından da benimsenmeye başlamış ve hastaneler yalın düşünce ilkeleri ile önemli kazançlar elde etmişlerdir. Bu çalışmada yalın düşünce ilkelerinin hukuk sisteminde de uygulanabileceği önerisi getirilmektedir. Hukuk sisteminin yalın düşünce ilkeleri bakış açısından ele alınması durumunda hukuk sisteminde çeşitli israfların olduğu görülmekte ve yalın düşünce ilkelerinin hukuk sisteminde uygulanabileceği pek çok alan bulunduğu tespit edilmektedir. Hukuk sisteminde bazı davaların bir yıldan az bir sürede sonuçlandırılamadığı görülmektedir. Bu sürenin bir kısmı israf olabilmekte ve bunun azaltılması gerekmektedir. Yalın üretim teknikleri hukuk sistemindeki israfların ortadan kaldırılması için pek çok olanak sunmaktadır. Bu çalışmada, yalın düşünce ilkelerinden hukuk sisteminin kalitesini ve etkinliğini artırmada nasıl yararlanılabileceği incelenmektedir. Çalışmada medeni yargı sistemi örnek olarak ele alınmış ve yalın düşünce bakış açısı ile değerlendirilmiştir. Sistemdeki olası israflar, değer katmayan faaliyetler belirlenmiştir. İsrafları ve değer katmayan faaliyetleri ortadan kaldırmak için yalın üretim teknikleri ve uygulamaları önerilmiştir.

Anahtar Kelimeler: Yalın düşünce, yalın üretim teknikleri, hukukta hizmet kalitesi, hukuk sisteminin etkinliği, yalın hukuk sistemi.

ABSTRACT

Lean thinking began with the Toyota production system. Many manufacturing firms have eliminated their non-value-added activities, increased their efficiency and decreased their costs by using the principles of lean thinking. By the year 2000 it could be seen that the principles of lean thinking can also be applied in service firms. From that year on hospitals have gained many benefits from lean thinking. This paper suggests that the principles of lean thinking can also be applied

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in a legal system. By examining the legal system from the perspective of lean thinking, it can be seen that there is much waste but many good opportunities to apply the principles of lean thinking in legal systems. In some cases in a legal system, hearings cannot be completed within a year. Some part of this waiting time can be attributed to waste and this waiting time should be reduced. There are many opportunities to eliminate waste in the legal system with lean techniques. This paper examines how the quality and efficiency of legal system can be improved with the principles of lean thinking. In this paper civil procedure legal system has been used as an example and has been evaluated from the perspective of lean thinking. The probable waste and non-value-added activities in the system have been determined so that lean manufacturing techniques and their applications could suggested to reduce this waste and non-value-added activities.

Keywords: Lean thinking, lean manufacturing techniques, service quality in law, efficiency of law system, lean law system.

I. INTRODUCTION

The term "lean manufacturing" was first used in the book by *Womack, Jones* and *Ross*[1]. Lean manufacturing has been increasingly adopted as a manufacturing method by many organizations, particularly within the automotive manufacturing industries. In the second book by *Womack* and *Jones*, lean thinking has been defined as more a thinking style than a method. Lean thinking has been called an integrated systematic approach to create a culture that provides all the people in organization with the tools to continuously improve their activities[2].

Lean thinking has been used in manufacturing industries for many years. Lean thinking has succeeded in improving quality and efficiency in manufacturing firms. The application of the principles of lean thinking has become widespread in service firms, especially in healthcare sector in the 2000s. Lean thinking principles can also be applied in legal systems. With the application of lean principles in a legal system, the service quality and efficiency of a legal system can be improved.

II. LEAN THINKING

Womack and *Jones* explained that lean thinking is much more than a technique; it is a way of thinking, and the whole system approach that creates a culture in which everyone in the organization continuously

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(1) *Womack*, J. P./*Jones*, D. T./*Ross*, D.: The Machine that Changed the World, New York 1990, p. 48.

(2) *Womack*, J. P./*Jones*, D. T.: Lean Thinking Banish Waste and Create Wealth in Your Corporation (Yalın Düşünce: İsrafı Yok Edin ve Şirketinizde Zenginlik Yaratın, Çeviren: Nesime Acar), Istanbul 1998, p. 119-129.

improve operations[3]. Lean thinking is essentially about getting the right things, to the right place, at the right time, in the right quantity while minimizing waste and being open and responsive to change[4]. The logic behind lean thinking is that companies jointly identify the value stream for each product from concept to consumption and optimize this value stream regardless of traditional functional or corporate boundaries[5].

Achieving a lean thinking status requires dramatic changes in all areas of the organization. Improvements in each area require careful consideration of work organization and cultural issues[6]. The goal of lean thinking is to reduce waste in human effort, inventory, time to market and manufacturing space to become highly responsive to customer demand while producing quality products in the most efficient and economical manner. This approach centers on the elimination of waste[7]. Applying lean thinking principles requires a way of thinking that focuses on making the product flow through value-adding processes without interruption (one-piece flow), a pull system that cascades back from customer demand by replenishing only what the next operation takes away at short intervals and a culture in which everyone is striving continuously to improve[8].

Lean thinking is a philosophy that shortens the time between the customer's request and its satisfaction by eliminating waste within a system. Lean thinking provides a way to do more with less. The main goal of lean thinking is to identify and eliminate non-value-added activities through continuous improvement of processes. The main principle of lean thinking is to determine waste throughout from the customer perspective and to find ways to eliminate waste. Lean thinking is a way to reduce waste throughout every process.

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(3) *Womack/Jones*, p. 11-27.

(4) *Kempton*, J.: Can Lean Thinking Apply to the Repair and Refurbishment of Properties in the Registered Social Landlord Sector?, Structural Survey 2006, Vol. 24, No. 3, p. 202.

(5) *Hines*, P./*Rich*, N./*Esain*, A.: Value Stream Mapping: A Distribution Industry Application, Benchmarking: An International Journal 1999, Vol. 6, No. 1, p. 60-77.

(6) *Sohal*, A. S.: Developing a Lean Production Organization: An Australian Case Study, International Journal of Operations and Production Management 1996, Vol. 16, No. 2, p. 92.

(7) *Seth*, D./*Gupta*, V.: Application of Value Stream Mapping for Lean Operations and Cycle Time Reduction: An Indian Case Study, Production Planning & Control 2005, Vol. 16, No. 1, p. 45.

(8) *Liker*, J. K.: The Toyota Way: 14 Management Principles From the World's Greatest Manufacturer, USA 2004, p. 20.

Waste is anything that does not add value to a product or service from the standpoint of the customer and the success of lean thinking depends on the identification and elimination of this waste[9]. Waste may take many forms and can be found at any time and in any place. It may be found hidden in policies, procedures, processes, product design and in operations[10]. Most companies waste 70-90 percent of their available resources. Even the best lean manufacturers probably waste 30 percent. Interestingly, every company has to find its own way to implement lean methods. There is no universal method that would apply to all[11].

Lean methodology gives some specific rules to use in determining what kinds of activities are value-added or non-value-added. The three rules that should be met for an activity to be considered value-added are: i) the customer should be willing to pay for the activity, ii) the activity should transform the product or service in some way, and iii) the activity should be done correctly the first time[12]. To develop breakthroughs with lean thinking, the first step is learning to see waste because the basic principle of lean thinking is to eliminate waste. If something does not directly add value, then it is waste. The value should be determined from the perspective of the customer. According to lean thinking philosophy, waste is categorized into seven categories[13].

Overproduction: Generating something (including information) more than it is needed at the time. For instance, in manufacturing that would mean: parts produced that can not be used or sold immediately; in service industries this would mean: creating unnecessary reports.

Motion: Movement of people that does not add value. For instance, in manufacturing: searching for tools; in service: getting signatures.

Transportation: Movement of product that does not add value. For instance, in manufacturing: moving parts needlessly; in service: moving information needlessly.

Waiting: Idle time created when material, information, people, or equipment is not ready. For instance, in manufacturing: waiting for materials; in service: waiting for reports.

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(9) *Womack/Jones*, p. 11-30.

(10) *Seth/Gupta*, p. 45.

(11) *Taj*, S.: Applying Lean Assessment Tools in Chinese Hi-tech Industries, Management Decision 2005, Vol. 43, No. 4, p. 629.

(12) *Sayer*, N. J./*Williams*, B.: Lean for Dummies, USA 2007, p. 51.

(13) *MCS Media, Inc.*: The Lean Pocket Guide XL, UK 2006, p. 174.

Processing: Effort with no value added from the customer's viewpoint. For instance, in manufacturing: unnecessary steps that do not add value; in service: multiple steps to approve something.

Inventory: More materials, parts, or products on hand than the customer needs right now. For instance; in manufacturing: products waiting to be sold; in service: files waiting to be worked on.

Defects: Work that is inferior to what the customer has requested. Any kind of service that is not good enough to meet the customer's requirements. For instance, in manufacturing: parts produced outside of the specifications; in service: data entry error.

III. LEAN THINKING PROCESS AND COMPONENTS

Lean thinking can be summarized as the systematic pursuit of perfect value through the elimination of waste in all aspects of the organizations' business processes. It requires a very clear focus on the value element of all products and services and a thorough understanding of the detailed operations of the business processes by which the product or service is provided[14]. *Womack* and *Jones* define lean manufacturing as a five-step process: defining customer value, defining the value stream, making it flow, pulling feedback from the customer and striving for excellence[15].

Value stream mapping is the visual representation of the material and information flow of a specified product family. Value stream mapping allows us to see the material and information flow and subsequently utilize lean manufacturing techniques to eliminate waste[16]. Value stream mapping enables all stakeholders of an organization to visualize and understand a process[17]. The value stream includes the value adding and non-value adding activities that are required to bring a product from raw material through delivery to the customer[18]. A good value stream analysis specifies what the customers seek in terms of requirements, price and time. It should capture current customer requirements as well as potential future or emerging requirements[19].

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(14) *Bendell*, T.: A Review and Comparison of Six Sigma and the Lean Organizations, The TQM Magazine 2006, Vol. 18, No. 3, p. 257.

(15) See *Womack/Jones*, p. 11-27.

(16) *CS Media, Inc.*, p. 156.

(17) *Nash*, M. A./*Poling*, S. R.: Mapping the Total Value Stream, A Comprehensive Guide for Production and Transactional Processes, USA 2008, p. 1.

(18) *Rother*, M./*Shook*, J.: Learning to See Value Stream Mapping to Add Value and Eliminate Muda, USA 1999, p. 3-4.

(19) *Ehrlich*, B. H.: Transactional Six Sigma and Lean Servicing, Leveraging Manufacturing Concepts to Achieve Worlds Class Service, USA 2002, p. 201.

With the current state value stream map, all the processes and activities required to deliver a service to customers can be visualized. By analyzing the stream of processes from the beginning to the end, waste can be determined. Current state value stream maps (CSVSM) illustrate all the steps so that, waste and non-value-added activities can be recognized and the processes improved. CSVSM also includes key measures such as process time and lead time. Analyzing the current steps of the processes, makes it possible to determine the steps that can be combined, eliminated and improved. Future state value stream maps (FSVSM) are prepared according to the analyses of the current state value stream maps by determining from the current state maps, which steps add value to customers and which do not. Future state mapping involves redesigning the processes and removing waste to develop an action plan to make the changes that are necessary to achieve the future state value stream maps. With the FSVSM, it is possible for customers to pull the service when they need instead of demanding and waiting. FSVSM are determined by the changes made in process steps to provide value to customers with fewer resources, more quickly and fewer defects. By preparing the FSVSM, the implementation step starts[20].

It is possible to implement basic lean thinking techniques from the manufacturing sector in the service sectors as well. A technique which can be implemented in one service organization successfully may not have high applicability in other service organizations. Service organizations should determine which techniques are highly applicable to their organizations. The basic techniques of lean thinking are; pull systems, kanban, small lots, quick setups, uniform production levels, total productive maintenance, 5S, visual control, poka yoke, cellular layouts, supplier relationships, standardization and continuous improvement. The applicability of these components varies according to the sector. Although all of these components can generally be implemented in manufacturing sectors, some of these components may not be appropriate for the service sectors[21].

IV. LEAN THINKING IN LEGAL SYSTEMS

There are many papers in the literature about the application of lean thinking principles and techniques in the service sector especially in healthcare. However there are a very limited number of papers about the application of lean thinking in legal systems. Because of the characteristics of service operations, it may be more difficult to apply lean thinking principles. In some circumstances one of the techniques of lean thinking may not be appropriate for the service sector in question.

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(20) *MCS Media, Inc.*, p. 144-164.
(21) *MCS Media, Inc.*, p. 1-194.

Besides, legal systems have unique characteristics when compared to other service sectors. However, there are many opportunities in the legal system to eliminate waste and improve the quality of services through the use of lean thinking. By applying lean thinking principles to a legal system, activities that add value and those that do not add value to the legal system can be analyzed. In this way, waste can be eliminated and all the activities can add value to the processes. *Martins* and *Carvalho* have studied the use of lean thinking in court systems[22] with the authors stating that the responsiveness of the courts could be increased by reducing waste in the court system. *Hines, Martins* and *Beale* stated that lean thinking can be applied in the legal sector and it can be very beneficial to help a legal system to improve its effectiveness[23].

The critical starting point for lean thinking is value. Value is the information or product that customer is willing to pay for and can only be defined by the ultimate customer. Value is defined by the customer and created by the producer. From customer's standpoint, value is why the producer exists[24]. To define value in a civil procedure legal system appropriately, the aim of civil procedure legal system and the customers of the civil procedure legal system should be explained. The key aim of the civil procedure law is to achieve subjective rights[25]. A subjective right is a legal right actually enjoyed or acquired by an individual[26]. While ensuring and achieving the parties' rights, civil procedure law allows the attainment of objective law as well. This performance ends with the definitive judgment of the court which should reestablish the legal peace that was breached. The aim of all procedural laws is to determine and recognize the substantive reality[27]. For courts specifically, key services include how individuals are treated, the manner in which cases are handled, and the integrity with which a court controls its operations. Courts exist to provide the services of a controlled, efficient, and orderly

(22) *Martins*, A. L./*Carvalho*, J. C.: The Court System Supply Chain and its Dynamics, Proceedings of the 9th International Symposium on Logistics, 2004, p. 29-33.

(23) *Hines*, P./*Martins*, A. L./*Beale*, J.: Testing the Boundaries of Lean Thinking: Observations from the Legal Public Sector, Public Money and Management 2008, Vol. 28, No. 1, p. 35-40.

(24) *Womack/Jones*, p. 31-42.

(25) *Pekcanıtez*, H.: Developments in European Law about Acceleration of Jurisdiction (Yargının Hızlandırılmasına İlişkin Avrupa Hukukundaki Gelişmeler), Symposium on Reform of Jurisdiction 2000 (Yargı Reformu Sempozyumu 2000), Izmir 2000, p. 41.

(26) *Ovacık*, M.: Turkish English Law Dictionary (Türkçe-İngilizce Hukuk Sözlüğü), Ankara 1995, p. 233.

(27) *Pekcanıtez*, p. 41-42.

legal process[28]. The principles of lean thinking would help achieve the aims of the civil procedure law system by determining the value-added and non-value-added activities in delivering justice.

Customers in a civil procedure legal system can be anyone who would be affected by the processes or services of the court. These customers can be internal customers or external customers. Final customers can be defined as the persons who are the parties to litigation. They may be real persons or legal persons. From the perspective of the customers who are parties to court cases it is possible to define the value of the civil procedure legal system as assuring a just solution in reasonable time. According to the value of the civil procedure law system, value-added activities and non-value-added activities can be defined. By eliminating the non-value-added activities, the quality of the civil procedure legal system could be improved and the time between bringing the lawsuit and the final decision would be shortened.

Examples of waste in a civil procedure law system can be stated as follows:

Overproduction: Demanding or providing more information than the next process needs can be overproduction waste. Collecting documents which are unnecessary within the content of the case, appointing unnecessary experts, conducting unnecessary views, and making unnecessary photocopies of the documents are examples of overproduction waste in a civil procedure legal system. Filing a lawsuit before the court instead of trying to settle the dispute out of court can also be overproduction waste.

Motion: Lawyers' searching for files in the court clerk's office is an example of motion waste.

Transportation: Moving documents needlessly is an example of transportation waste.

Waiting: Lawyers are ready at 9:30 for the court and wait for the court usher to announce their turn because a realistic time for each hearing is not alloted. This causes waiting waste. Waiting for expert reports, waiting for proper notifications and waiting because the judge could not examine the file are additional examples of waiting waste.

Processing: Holding a hearing even though all parties have not been notified. Also holding a hearing even though the required files are not ready for the case are examples of processing waste.

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(28) *Ostrom*, B. J./*Ostrom*, J. W./*Hanson*, R. W./*Kleiman*, R.: Trial Courts As Organizations, USA 2007, p. 143.

Defects: Delay of experts' reports on time is an example of defect waste. Appointing inappropriate experts to the case and bringing the suit in the wrong court or an unauthorized court are defect waste.

Inventory: Files waiting to be examined and cases waiting for the expert reports can be stated as inventory waste .

Mapping the current value stream makes it possible to see that there are many hearings without any result for a case. From the perspective of customers, these hearings do not add value. If we can consider these unnecessary hearings as waste, the next step would be determine the reasons for not resolving cases. For example, reasons for no progress at the hearings can be a shortage of judges, judges not examining the file beforehand and needing extra time for this, parties dismissing current lawyers and appointing new lawyers, non-attendance of the parties, parties not paying the required expenses and costs, and an inefficient mail system[29]. After determining the reasons for no progress in hearings, the next step will be to find solutions for these causes. At this point it is important to determine the root cause and to separate root causes from symptoms.

V. APPLYING LEAN THINKING PRINCIPLES TO LEGAL SYSTEM

While determining waste in a civil procedure legal system, it should be understood that some delays are inevitable. Delays which are unavoidable and those which can be avoided by better case management, improved procedures and greater cooperation should be seperated from each other[30]. Although, some delays are necessary, there are many opportunities to reduce delay times in civil procedure legal system by using the principles of lean thinking.

Lean manufacturing techniques can be applied to legal processes to improve the quality and efficiency of a legal system. Some lean manufacturing techniques which can be applied in civil procedure law system are evaluated below.

Pull system: Pull systems refer to parts being replenished at the request of the customer or user. In the current process, judges determine the appropriate date for the next hearing by asking the parties' lawyers. The date of the next hearing should be an appropriate time for all customers as well. In order to hold a hearing at the determined time, all

(29) *Elveriş, İ./Jahic, G./Kalem, S.*: Judicial Proceedings at Istanbul Civil Courts, Parties, Cases and Process (İstanbul Asliye Hukuk Mahkemelerinde Yargılama Süreci, Taraflar, Davalar ve İşleyiş), Istanbul 2009, p. 66-68.

(30) *Dandurand, Y.*: Addressing Inefficiencies in the Criminal Justice Process, BC Justice Efficiencies Project, Executive Summary 2009, p. 8.

the necessary documents should have been collected beforehand. If the documents could be fully collected and ready at the hearing, then it is possible to state that a pull system has worked successfully. However, if the documents were ready at the determined time of the hearing and the hearing was held without the missing documents, then the system is not at pull system but rather a push system. To ensure the success of a pull system, the time untill the next hearing as determined by judge and lawyers should be enough to obtain all documents. To determine this time appropriately, the judge should have precise information about the case when deciding the time of the hearing.

Once evidence is introduced into a case, it becomes the court's responsibility to store and protect it. At a minimum, a court's responsibility extends until a final result is reached in a case. Particularly, physical items of evidence such as clothing and pieces of wood are put at risk for water damage, high humidity or dampness, mold, and other environmental conditions[31]. To store and protect evidence is very important; the courts' abilities to store and protect them are a critical part of the legal system. If a good pull system could be achieved, it is not necessary to store and protect such evidence at the courts. Evidence could be stored and professionally protected at better storage places to be ready when needed at the courts. A pull system for the evidence would be very helpful to the legal system.

Reducing the setup times: A couple of years ago it was possible to wait six months for an identification card requiring at case to be held in abatement to wait for these documents. By collecting all documents electronically, some of the notifications can be eliminated so waiting time for the notifications and for the files would be eliminated as well. Acquiring files electronically would shorten the time for preparation of cases and minimize waiting waste. In addition to acquiring files electronically, collecting documents according to the content of the case and avoiding unnecessary documents are very important in minimizing the preparation time for cases. By this way, overproduction waste can be eliminated.

Standardization: Standardization aims to establish the best and most reliable method for performing an operation. Judges should be appointed according to their areas of expertise. In this regard, appointment of criminal court judges to civil law courts and vice versa

(31) *Aikman*, A. B.: The Art and Practice of Court Administration, USA 2007, p. 232-233.

should be avoided[32]. All the similiar cases should be examined by the same judges who have or will have expertise for certain types of cases. This can be an example of the lean manufacturing technique standardization. Since there are different types of notification times in civil procedure law, standardization of the notification time as seven days could be an example of a standardization technique as well.

Standardization of the time management of the courts is also very important. Besides, not only courts should be timely, but also judges should devote sufficient time and attention to ensure justice[33].

Poka yoke: Poka yoke refers to technology and procedures designed to prevent defects. Defects should be detected before each step in a process[34]. Resources consumed to fix defects are considered waste in lean thinking. Defects should be detected and eliminated at the source itself. This technique helps firms to recognize abnormalities easily. Holding a hearing, even though the required files are not ready or the notification has not been made, is waste and should be avoided. Files should be checked continuously to see if all documents are collected or not. For the files which are not completed, the hearings should not be held. Files could be held by the court secretariat continuously (rather than in the court chamber) and holding a hearing for cases where the files which has missing documents should be avoided. This can be an example for the poka yoke technique applied to a legal system.

Security is also very important in courts. There are many opportunities to apply poka yoke techniques in enhancing security. For example, the poka yoke technique can be used to physically secure rooms where documents are kept. A poka yoke system such as virus protection software can also used to prevent the hackers from accessing electronic documents.

A mechanism to help reduce misplaced files is color-coding of the case numbers and using terminal digit filing. Both mechanisms help someone to quickly see if a file is misplaced when returned to a shelf[35]. This mechanism would be an example of poka yoke technique to prevent defects.

5S: 5S is a technique for creating and maintaining a clean, neat and orderly work environment. The five pillars are; sort, set in order, shine,

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(32) *Demirbaş*, T.: Structural Problems of Jurisdiction (Yargının Yapısal Sorunları), Symposium on Reform of Jurisdiction (Yargı Reformu Sempozyumu 2000), Izmir 2000, p. 356.

(33) *Ostrom/Ostrom/Hanson/Kleiman*, p. 20.

(34) *Wilson*, L.: How to Implement Lean Manufacturing, 2010, p. 11.

(35) *Aikman*, p. 291.

standardize and sustain[36]. Arrangement of files in a court secretariat room is very important. Sometimes, it may be not possible to find a notification letter: With the 5S technique of lean manufacturing, files can be arranged and the time needed to search for files -motion waste- can be minimized.

Applying the 5S technique is also very important for storing and protecting papers and documents. Papers and evidence are stored for years. There may be many risks such as fire or water damage or mold. By applying the 5S technique it will be easier to monitor papers and documents and to seperate them when there is an emergency condition.

Reducing the batch sizes: The main key of lean thinking is one piece flow. Bringing one file for signature as a 'one-flow' instead of many files will reduce waiting time and lead time for all customers. Information techniques will help reducing transfer batch sizes and one-piece flow could be achieved.

Kaizen: Kaizen is a Japanese term for continuous improvement. Kaizen will help to sustain continual improvement culture[37]. By applying kaizen programs in a legal system, it would be possible to eliminate waste with small daily improvements performed by everyone in the system.

Continuous Flow: Continuous flow can be achieved by movement of product from one manufacturing operation or machine to another without stopping[38]. An important concept in lean systems is that information and materials should flow uninterrupted between the operations of a process. In order to enhance continuous flow in legal systems, the information wanted from other organizations should be acquired in reasonable time. Otherwise it is not possible to achieve continuous flow.

Visual Control: Visual control uses simple signals that provide an immediate understanding of a situation or condition[39]. Visual controls are the signs and other forms of visual information that give the ability to determine at a glance whether a situation is normal or abnormal. In a legal system checklists, could be used to ascertain if needed documents are collected for hearings. If the checklist is not fulfilled, then the judge should complete it to maintain the process rapidly. This would reduce the waste of waiting.

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(36) *Wilson*, p. 63.
(37) *Nash/Poling*, p. 257.
(38) *Nash/Poling*, p. 253.
(39) *Nash/Poling*, p. 265.

The Council of Europe (2005) has introduced a time management checklist which consists of a list of indicators to analyse the length of proceedings in the justice system. According to the Council of Europe (2005), with a checklist it would be possible to reduce undue delays, ensure effectiveness of proceedings and provide necessary transparency and foreseeability for users of justice systems[40]. In lean thinking, visualization has a very important role. Therefore, a checklist helps to enhance visualization. At this point, the checklist prepared by the Council of Europe is a good example of application of the visual control technique of lean manufacturing.

Aikman states that courts use electronic white boards for internal meetings. These boards electronically produce hard copies of what was written on the board. Some of these courts also use them in the courtroom. Now, there are electronic white boards that have large touch screens that can project what is written or drawn on the board onto wall monitors or export the information to computers[41]. This is a good example of the visual control technique of lean manufacturing. It is recommended to use this system in the legal system to help increasing efficiency in Turkish court houses as well.

Courtrooms or offices should be easily accessible for all customers. This is possible with easily seen signs. Transportation and motion waste can be decreased when these signs show the layout of courtrooms and offices in court houses.

Spaghetti diagram: A spaghetti diagram is a diagram for illustrating paths that files or customers travel through the process. By analyzing spaghetti diagrams, it is possible to determine transportation and motion waste[42]. Creating spaghetti diagrams for legal systems to show the movement of people and files between processes can show inefficient processes.

5-Whys: 5-Whys is a simple and direct way to get to the underlying root causes of a problem. Asking why several times does not permit the luxury of stopping at a superficial solution to a problem[43]. The technique of 5-whys has been developed by Toyota to help determine the root cause of a problem. Until the root cause of the problem is found, the question "why?" is continually asked. Sometimes, the root cause can be

(40) *Dandurand*, p. 9.
(41) *Aikman*, p. 387.
(42) *Wilson*, p. 127.
(43) *Dirgo*, R.: Look Forward Beyond Lean and Six Sigma a Self Perpetuating Enterprise Improvement Method, USA 2005, p. 79.

found with three questions or sometimes ten questions but the question should be asked until the root cause is discovered.

An example for applying 5-whys techniques in a legal system can be illustrated as follows:

Problem: Resolution of disputes takes a very long time in the courts.

- Why does it take very long time to resolve disputes at courts? Because the time gaps between the hearings are very long.
- Why are the time gaps between the hearings very long? Because judges need time to examine the case.
- Why does it take the judges a very long time to examine the cases? Because of workload judges have many jobs to do.
- Why do judges have many jobs to do? Because there is an insufficient number of judges.

In this example the root cause of the problem is the number of judges.

After mapping the current value stream in a civil procedure legal system, the non-value-added activities and wastes can be visualized. In order to eliminate these sources of waste, some suggestions have been made below. By eliminating waste in the civil procedure legal system, the time to resolve cases would be shortened.

- All hearings should have realistic times. For instance the first hearing could be at 9:30 am, the second at 10:00 am and third at 10:15 am[44]. In this way, the time lawyers have to wait at the courts would be minimized and waiting waste would be eliminated.

- According to the Turkish Civil Procedure Law (CPL), evidence should be examined at the same hearing as far as possible. If it is not possible to examine all the evidence at the same hearing, there should be other hearings to complete the examination of evidence (CPL Art. 243). Holding a hearing before collecting all the evidence is a complete waste. If the court could ensure that all evidence is ready before the hearing and if it is not then the hearing should not be held so that, over processing waste would be decreased significantly. Due to unprepared evidence, the case may go for four or five hearings. It is possible to classify hearings held before the evidence is ready as waste.

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(44) *Kuru*, B./*Arslan*, R./*Yılmaz*, E.: Civil Procedure Law (Medeni Usul Hukuku), Ankara 2007, p. 355.

- It is very important to reduce the workload of judges. When the workload of judges can be reduced, the efficiency of the hearings would be improved. In the current situation, judges have to examine many cases, so it is usually difficult for the judges to completely review all the cases before the hearings. Because of this it is not always possible to move the files forward in a couple of hearings.

- The appointment of experts and the workload of experts are also very important. Sometimes experts have five or six different files to examine at the same time. This delays the preparation of expert reports. This waiting waste could be eliminated by a better system for appointment of experts by courts.

- Arbitration is an alternative to national courts where conflicts are resolved by experienced arbitrators. Arbitration is generally more rapid than national courts[45] and is a very good example of lean thinking in the civil procedure legal system. Defects are minimized in arbitration since conflicts are resolved by experts. Queues and waiting are minimized in arbitration as well. In court litigation sometimes it may take nearly five months for a hearing to be held for a case, which is a very important waste. This waste can be eliminated by arbitration.

- Courts should prevent parties from bringing all disputes among them to court. If a dispute could not be resolved by amicable settlement then it may be tranferred to the court later. In this way it would be possible to eliminate overproduction waste.

- In order to reduce the workload in court houses alternative dispute resolution methods like mediation and conciliation should be encouraged (overproduction waste can be precluded).

- In order to have an accelerated and fair trial, there should be new regulations to prevent judges' arbitrariness and eliminate the responsibility of the judges; new regulations should come into force that allow judges to perform their jobs effectively and to be controlled properly. For example, a judge should not be able to postpone the hearing due to not having read the file[46] (the wait because of the judge's failure to read the file should be controlled by a poka yoke system).

- It is reality that hearings are postponed due to the requirement to order documents from birth records or to ask information of the land registry etc. In order to have accelerated litigation it has been suggested

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(45) *Yılmaz*, E.: General Introduction to Arbitration Law and Its' Development in our Country, Reform of Jurisdiction (Tahkim Hukukuna Genel Giriş ve Ülkemizdeki Gelişim), Symposium on Reform of Jurisdiction 2000 (Yargı Reformu Sempozyumu 2000), Izmir 2000, p. 271.

(46) *Demirbaş*, p. 357.

that lawyers should provide these documents without court intervention[47]. However, the Turkish Ministry of Justice has a National Judiciary Information System (UYAP) which is an e-justice system that is part of the e-government effort, which has been developed in order to ensure a fast, reliable, soundly operated and accurate judicial system. This central network project includes all of the courts, public prosecutors services, prisons, other judicial institutions and other government departments in Turkey. This information system was prepared and established to improve the operation and efficiency of the judiciary and to create an effective and less bureaucratic judicial system for each concerned institutions and citizens. UYAP was planned to be integrate with affected public institutions and organizations; integration was provided with the MERNIS (Central Population Administration System) system and the Record of Convictions Database and give users the opportunity to search identity and criminal records in seconds. There are other projects such as the POLNET (Police, Gendarmerie) system and the TAKBIS (land registry) system. With these systems driving license databases and land registry databases can be instantly queried by judges at a hearing. Prosecutors can confirm driving licenses and land registries under their limited authority as well. Mails can be followed up by court users instantly. The UYAP system integrate the Postal Information System as well. This project is a very important step from the point of lean thinking in the legal system[48].

- For rapid and reliable evaluation of evidence, modern equipment facilities and advanced technologies should be used in forensic laboratories to prevent errors and accelerate the preparation process[49].

- Judges should control the case during the process, reject unnecessary demands, should not order unnecessary documents and execute the litigation effectively and rapidly. Judges should complete the collection of information about the file before determining a hearing date. A judge who is well aware of the case could decide all the parties' demands at once which would a very important time saving[50].

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(47) *Sungurtekin Özkan*, M.: The Role of Lawyers in Delay and Acceleration of Jurisdiction (Yargılamanın Gecikmesi ve Hızlandırılmasında Avukatların Rolü), Symposium on Reform of Jurisdiction 2000 (Yargı Reformu Sempozyumu 2000), Izmir 2000, p. 150.

(48) http://www.uyap.gov.tr/english/genelbilgiler/genelbilgi.html (date of access 07.10.2009).

(49) *Görgün*, Ş.: The Roles of Arbitration, Parties and the Lawyers in Delay and Acceleration of Jurisdiction (Yargılamanın Gecikmesi ve Hızlandırılmasında Tahkim, Taraf ve Avukatların Rolü), Symposium on Reform of Jurisdiction 2000 (Yargı Reformu Sempozyumu 2000), Izmir 2000, p. 174.

(50) *Görgün*, p. 177.

- If lawyers serve a certified copy of all the evidence to the other party as an attachment to the statement of claim, this would prevent the defendants from reserving the right of reply until the evidence is received or demand presentation of the original version of the uncertified documents. Fulfilling the interim orders of the court in time would prevent delays as well[51].

- The expectations of judges and lawyers about the time that will be needed to resolve the dispute have a serious effect on the actual time for resolving the dispute[52].

- Layout of the courtrooms and offices is very significant. A well-planned layout may decrease motion and transportation waste.

VI. THE BENEFITS OF APPLYING LEAN THINKING PRINCIPLES TO THE CIVIL PROCEDURE LAW SYSTEM

Accumulation and delay are among the most important problems that have been discovered about courts in the world. In many countries lots of cases drag on in courts without any resolution[53]. Studies have shown that 18 % of the hearings are seen as time waste. When it is generally looked at, there has been nothing done in 21,27 % of the first 10 hearings. This situation equates to one of every five hearings being held unnecessarily and constitutes time and resource waste for all participants[54], resulting in the time from the beginning and ending of a case being more than a year. Since it is waste according to the principles of lean thinking, this time should be reduced. From the perspective of lean thinking, there are many opportunities to eliminate these wastes. The span between beginning and ending of the cases can be reduced with lean thinking principles.

All jobs waiting in the queues to be processed are defined as waste according to lean thinking. So to enhance lean thinking principles the jobs waiting to be processed should be visible and the waiting time of the jobs before processing should be minimized. Minimizing the waiting time for jobs has many opportunities for continuous improvement. With reduction of the percentage of non-value-added activities, the quality of legal systems would increase and cost savings can be realized and the quality of the legal system would be improved by lean thinking principles. Unnecessary steps could be eliminated and waiting time for all

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(51) *Görgün*, p. 176.

(52) *Ostrom*, B./*Hanson*, R.: Efficiencies, Timeliness and Quality: A New Perspective from Nine State Criminal Trial Courts, U.S. Department of Justice, National Institute of Justice and The State Justice Institute, Research Report 1999.

(53) *Elveriş/Jahic/Kalem*, p. 14.

(54) *Elveriş/Jahic/Kalem*, p. 66.

customers could be decreased by applying lean thinking principles in a legal system.

Lean thinking is not about 'one-time' projects. It is a philosophy to eliminate waste and to make improvements continuously. Lean thinking is a way of seeing and managing the way work is done and it helps the organizations to determine wastes and how to eliminate them.

VII. CONCLUSION

Lean thinking principles and techniques have been used in manufacturing for many years. Service firms benefit from lean thinking such as improving efficiency and quality while decreasing costs. When we look at service sectors, we see lean thinking is being applied mostly in healthcare as well as applications in schools, airlines and government. Although the application of lean thinking in legal system has been limited up to now, there are many opportunities to apply lean thinking principles and techniques in legal system.

Timeliness is a very important performance measure in a legal system where 'just in time' can be seen as resolving cases without unnecessary lapse of time. In this paper, legal systems have been evaluated according to the principles of a lean system. There are many opportunities in a legal system to apply lean thinking. According to our analysis, it has been seen that seven types of waste stated in the principles of a lean thinking are also found in legal systems. From the perspective of lean thinking, much waste could be discovered in a legal system and eliminated with lean thinking principles and techniques. By determining the current value stream maps of the activities in a legal system the value-added and non-value-added activities could be easily seen. After mapping the activities in a legal system, methods to eliminate non-value-added activities could be examined. Lean manufacturing techniques could also be used to eliminate this waste and non-value-added activities in a legal system. Through further research, examples of the application of the principles of lean thinking and methods could be increased so that more and more areas to apply lean thinking in legal systems could be found.

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