Elektronik Sosyal Bilimler Dergisi www.esosder.org
Electronic Journal of Social Sciences ISSN:1304-0278
Kış -2019 Cilt:18 Sayı:69 (454-465) Winter-2019 Volume:18 Issue:69

REDUCTION OF LEAN IN THE HEALTH AND LEAN APPLICATION IN THE EMERGENCY OF X HOSPITAL

SAĞLIKTA İSRAFIN AZALTILMASI VE X HASTANESİ ACİL SERVİSİNDE YALIN UYGULAMA

Menekşe KILIÇARSLAN[1]

Abstract

Growing global competition is also experienced in the health sector. In this competition environment, hospitals should both be quick about processes and provide quality care of patient and service at once and without mistake. Hence, the necessity for minimizing the waiting-period with effective and productive working comes into prominence. The aim in the lean philosophy is to produce quality product or provide service with fewer cost and in a shorter time. Low cost, quality product or service, provided in a short time increase the satisfaction and demand of customer. Patient care system is not only related to focusing on the treatment. Today, the satisfaction of patient is a significant criterion. It is necessary to increase the speed of process flow by creation a valuation map, differentiating value adding and non-value adding activities and elimination the leans with the methods of debugging within the lean approach of hospitals.In this study, the definition of lean thinking, the appearance of the philosophy, its history and technics are discussed and differences between before and after the lean practices by giving example of a practice in emergency are compared.

Keywords - Lean hospital[1], Process[2], Value[3], lean Hospital[4]

Öz

Her geçen gün artan küresel rekabet, sağlık sektöründe de yaşanmaktadır. Bu rekabet ortamında hastanelerin hem süreçlerde hızlı olmaları hem de kaliteli hasta bakımı ve tek seferde hatasız hizmet sunmaları gerekmektedir. Bunun için de etkin ve verimli çalışma ile beklemelerin minimuma indirilmesi gerekliliği ön plana çıkmaktadır. Yalın felsefede amaç; daha az maliyetle daha kısa sürede kaliteli ürün üretmek veya hizmet sunmaktır. Düşük maliyet, kısa sürede sunulan kaliteli ürün veya hizmet müşteri memnuniyetini ve talebi arttırır. Hasta bakım hizmeti, sadece tedaviye odaklanmak değildir. Günümüzde hasta memnuniyeti önemli bir ölçüt olmaktadır. Hastanelerin, yalın yaklaşım anlayışı içinde hatasızlaştırma yöntemleri ile değer akışı haritası çıkartarak, değer yaratan ve yaratmayan faaliyetlerin ayırımını yaparak, israfları ortadan kaldırarak süreç akış hızını artırmaları gerekmektedir. Bu çalışmada yalın düşünce tanımı, düşüncenin ortaya çıkışı, tarihi ve tekniklerinin neler olduğu üzerinde durulmuş ve acil serviste uygulama örneği sunularak yalın uygulama öncesi ve sonrası arasındaki farklılıklar karşılaştırılmıştır.

Anahtar Kelimeler: Yalın hastane, Süreç, Değer, İsraf, Hastane

[1]Ass.Prof. Dr., İstanbul Aydin University, Health Management Department, meneksevarol69@gmail.com,
ORCID: 0000-0002-0580-8645

Makale Türü: Araştırma Makalesi – Geliş Tarihi: 05/10/2018 – Kabul Tarihi: 15/01/2019
DOI:10.17755.esosder.467542

1. INTRODUCTION

Lean Concepts

Groover (2007:770) defines lean production as "doing more work with fewer sources and providing products, beyond the demand of the customers." When the market is very big, it is possible and profitable to produce standard products with low cost. However, it is not proper to practise mass-production in the markets, which do not have this characteristic (Kapila and Mead, 2002: 175). Some lean definitions are shown on the table 1.

While leaders in Toyota talk about respecting people, they put a different meaning to the word of respect from other traditional organizations. Respect does not give managers freedom to do what they want as long as the results are good (Womack, J. 2007: 4). The voters involved in the political decision-making mechanism are politicians, bureaucrats, groups violate existing legal religious moral and cultural norms in the society by providing private benefits(Bakkal,et. al., 2018:10).Lean production "is a comprehensive philosophy which is used to structure, operate control, manage and constantly develop the industrial production systems" (Detty and Yingling, 2000: 429). It is an integrated triangle, which unites management, philosophy and technology (Convis, 2001). Womack and et. al. (1990: 35) states that what makes lean production "lean" is the fact that it has nearly half of the expenses of mass production in terms of effort, field, investment, and engineering time when compared to mass production. Regional differences have been tried to be solved with these agencies (Bakkal, et. al., 2018:4)

Lean Thinking

Lean production is a philosophy that aims to increase profit by reducing the expenses with the elimination of lean. Lean thinking is the whole of principles, which consist of many technics that are developed from the same basic logic and idea. Lean thinking is a series of thoughts, which is not only production but also a system of management (Womack, J. 2007: 5).

Value: The starting of thinking is "value". Producer creates the value but it is defined by the final customer. The demands of customer in a certain time and with a certain price should be denominated with certain goods or services, for the definition of value makes sense (Aksoylu, 2014: 262).

Value Flow: The second step of lean thinking is the definition of value flow. Value flow includes all processes from one producer to the other producer and final consumer in the transformation of raw material to the final product (Efe and Engin, 2012: 80).

Continuous Flow: "Flow" is another column of the Lean home with the quality. During a value flow, a steady and continuous flow must be the main aim of an organization. In a perfect flow environment, products move in a single peace because delays would decrease at a minimum level. Instead of an elevator that carries people in bulk between floors, think of an escalator that does constantly the same thing in a single piece (Balcı, 2011: 42).

Pull: The Pull principle of Lean Thinking predicts the pulling of the value by customer from its source. Pull refers to the stage which exists at further stages but not before that any products or services is not be produced without the demand from customer (Balcı, 2011: 42).

Perfectness: The cycle of PDCA (Plan-Do-Check-Act) is used effectively in the path to the perfectness. This approach exists in the Total Quality System (Zerenler and Rıfat, 2006: 758).

Just in time production: Taiichi Ohno, who brought the concept of just in time production in the literature of world-produce systems, planted the seeds of this system in the American supermarket system (Alkan, 2011: 179).

Non-stock Production: Realizing personnel or material stocks at zero level in the service field is the most significant element of lean service. Evet some researchers used the term of "stockless production" instead of lean production or Toyota production. As in the words of Japan Researcher, Shingo (1998), "stock" is the source of all-evil. Toyota company is a striking example for which the sense of non-stock production aim in the lean service can be used in which proportions (cited by Turan and Turan, 2015: 129).

The average stock of the parts of basic systems in the Takaoka factory, belong to Toyota Company in Japan was only for two hours in 1986. This example shows that non-stock production would be possible if all technics of lean production are used together (Womack et. al. 990:83). Another example of the point, which has been reached in the non-stock production, can be seen in a study. According to a study on the analysing of 18 sub-industry companies, which work with the car manufacturer firms in the USA, Europe and Japan between 1987, and 189 years, while stock of work in process were approximately six days in the USA and Europe, it was 0,85 day in Japan firms. While stock of finished product was approximately 2,4 days in the USA, 10 days in Europe, it was 0,67 day in Japan firms (Nishiguchi, 1989, Akt., Wasti et. al., 2009:316).

Leans (3M Concept): Unnecessary activities, i.e. leans, are defines as 3M term in the lean service. 3M consists of three Japan words that start with M letter. These are muda, muri and mura. Their meainings are (Sultanov, 2010: 55).

Muda: It means loss. They are activities, which gains no favour when performed. Primary types of muda are; overproduction, muda of transportation, muda of waiting, muda of unnecessary operation, muda of stocking, muda of movement and muda of repair.

Muri: It means overload. It refers to force equipment and people in the working are above capacity.

Mura: It means irregularity. It refers to all kinds of irregularities that block or complicate work in the working area.

Fault Lean: Fault can be defined firstly as a working activity, which does not made right. It is not necessary that a fault causes a damage. Processing faults include faults that go wrong and cause repetitions and circumlocutions. Fault decelerates the product and lean the working time of workers (Ertaş and Arslan, 2010: 42).

Surplus Production Lean: It can be defined as overproduction (more than customer's demand) of a product or early untimely production of a product before a customer needs it. When you go to a dealer to buy a new car, stock that you see around is overproduction (Özkol, 2013: 120).

Lean of Unnecessary Material Movement: It refers to excessive movement of a lean in the system. When existing order considered; a sum of movement (transport) may be necessary. In the long-term, order should be restructured to reduce the transport distance (Özkol, 2013: 121).

Lean of Waiting: Waiting period can be defined as a time when nothing happens. For most people, it is easy to see the lack of activity as a kind of lean(Kalkan,2015). Machines wait for the next step in the course of maintenance. Workers wait because of the system problems or unbalanced workload. Lean methods help lean reduce in both cases (Ertaş and Arslan, 2010: 42).

Workers that wait: Worker are generally kept in the waiting status instead of doing things that add value. There are process faults, delays in the previous processes, unbalanced workload among common reasons for waiting (Sultanov, 2010: 55).

Lean of Overstock: Stocks like material, tools and equipment, definitely lead to lean. Overstock, referring to have stock more than we need to do our works, is a kind of lean. Having overstock leads to the lean of place and cash, however; running out of stock also causes additional movement, cost and prompt shipment leans.

Lean of Unnecessary Human Movement: Lean of transport (unnecessary material movement) is related to product, lean of unnecessary human movement is related to workers. Organizations should reduce the movement amount of worker to do their jobs. Walking is a kind of lean which can be reduced by improving settlement plan and the organization of material and equipment. Search for movement, which is leand, is not limited with the walking. But, it is a good start (Kılıçaslan, M.2016: 76).

Lean of unnecessary operation: It is a work, which is unnecessary or over-qualified (more than customer needs). People or lack of communication causes unnecessary processes, which are frequently repeated(Aktürk,2016)

Lean of Talent: This eighth kind of lean does not appear in every source. Some sources say that lean of human potential is integrated with other kinds of lean. Lean is not only related to the management of equipment or processes but the management, leading, encouraging of people (Kılıçaslan, M.2016: 92).

Table 1. Six Types of Lean in the Health Sector

Type of Lean	*Explanation*	*Effect on the Health Sector*
Empty Areas	Empty areas that remain idle	Not able to use storehouse, garden, archive or idle buildings which belong to Hospital
Lean of Talent	Increase the information level of personnel and avoid standardized works.	Make personnel continue to work in the department which s/he fails or make personnel change the department in which s/he is successful
Lean of Management	Manager who are expert in their field without the sense of professional management (like a physician works in the selling department or as a business manager).	Management problems, organizational conflict, hierarchy, organization problems, service problems, performance evaluation which is not made in a accurate and fair way, lack of financing, equipment coordination in the management etc.
Lean of Capacity	Lack of proper building service, personnel, material and system	The excess or lack of services, buildings, serves, personnel
Global Lean	Unnecessary drug use, constantly material changing, not able to keep with the technological developments, violating the hygienic measures, decrease in the environmental awareness	Not able to raise buildings with a system that does not harm environment, non-systematic hygienic rules, lack of training regarding lean
Inexperience	The effort of newly appointed personnel to keep pace with the system	Confusing the precedence or rules of processes during the service, lack of information especially regarding the use use technological devices.

Source: Kılıçarslan, M. (2016). A Study on an Integrated Model Proposal for Leaning of Healthcare Services, Beykent University, Unpublished Doctoral Dissertation, İstanbul.

Technics of Lean Thinking

Kanban Pull System: Kanban system works by the principle of 'pull' not by the principle of 'push'. Kanban always links processes of services by moving from finish to start with physical units but in the directly away production flow (Chan,2001) .

5S Order and Hygiene

5S Technic that includes efforts regarding the activities of order and hygiene is derived its name from 5 words which starts with S letter in Japan. These words and their meanings are as; Seiri (Picking), Seiton (Organising), Seiso (Cleaning), Seiketsu (Standardization), Shitsuke (Discipline). The point that 5S wishes to reach with hygiene and order is the zero point for lean, processes, delays, waiting and complaints.

Table3. 5S Principles aimed at the Storage of Materials according to the frequency of their use

Methods of Visual Management The aim of Visual management is to reduce "information faults". 'People ask many questions or make up something in a workplace in which lack of information exists' (Galsworth, 2005: 32).

Kaizen; Kaizen aims to do minor works with the gradual and constant improvements; develop continuously the standard and go beyond the developed standards every time. Masaaki İmai, author of the 'Kaizen' attributes the success of Japan in technology to fast adapting of production processes to the demand of customer market. One the characteristics of Japan workers is that they use their brain as much as they use their hands. "Our workers come up with a 1,5 million proposal and 95% of these proposals is applied. The demand for improvement is tactually concrete in the atmosphere of Toyota" (Shingo, 1988, cited by Turan and turan, 2015: 129).

Lean Practices In Hospitals

Problems in the health sector

Hospitals face with many rooted problems. Generally, hospitals are designed with the same pattern so they have a tendency to have same problems. Their physical settlement plan have similar nature, processes are developed with the same paradigms and similar trainings. By copying other hospitals, additional improvement can be made. However, it is necessary to use lean concepts for new striking improvements by including workers in their own developments process and determination of lean and reframing the processes.

Table 2. A General Table on Modern Hospital Problems

Delays in the delivery of materials because of wrong orders
Complication in the material supply
Materials that wait for no reasons in the services because of the wrong demands
Healthcare personnel, having difficulty in adapting because the lack of information about daily material
Loss of periodical control on the stock movements of pocket storehouses, which are not fully used
Simplistic injuries or diseases that health personnel do not report or skip in time
Failure to comply with the necessary instructions, which should be followed in the quality standard, in time
Assignment of health Professional in more than one hospital or their leave of employment
Health personnel lay burden on other people by health personnel and make someone do their job

Lack of Personnel

The number of preventable deaths by medical errors is 98.000 in the USA. The problems of quality and patient safety do not concern only the USA. Canada Institute of Health Intelligence states that 24.000 people die from the medical errors such as surgical error, drug error or hospital-acquired infection.http://www.ankemdernegi.org.tr/ANKEMJOURNALPDF/ANKEM_15_3_244_246.pdf

Price Pressure and Cost Problems:

Every year, health care costs increase at the rate of nearly 10%, which is more than inflation. Health expenses are at the level of 2 trillion dollars that consumes 16% of the GDP in the USA. Per capita expenditure in the USA is at the highest level in the world and this number is much more than the similar industrialized countries. High expenditure develops services and saves life by bringing along innovation and technology but cost increases is high as well (Eris , 2016;93).

In addition, decreasing the prices leads doctor to prefer leave from the Medicare (Health Insurance Program for people 65 and older in the USA) and Medicaid (Need-based Health Insurance Program in the USA) system or examine a patient.

Examples of Lean Health Practices in Turkey and in the World;

All kinds of organization, including hospitals should deals with the cash flow, customer satisfaction and quality so they started to search for ways to apply lean practices in the basic processes. Lean is a kit, a management system that can change the organization and management of hospitals. Lean is method that enables hospital to increase their patient care quality by decreasing errors and waiting-periods . Health care systems, continuous delivery of personal health care services, can be improved, target, hotel and patient satisfaction. The need to spend far away, there is a wrong term in providing patient safety, outside time outdoors may show inadequacies (Şimşir, Bağışan, Kurutkan, 2015). The last 20 years have been reduced in different ways with different joining in the last 20 years. The materials were taken from a central hospital supply room or with a service material (Graban, 2011: 46). 2006: 1064) .The process map for the emergency service was allowed and the patient queues were reduced to a minimum level (Kind et al., 2006: 391-397). A General Literature Review on Lean Practices in Health Businesses and a wide range of publications. (Yildiz and Yalman, 2015).He has improved in business (Bushell et al., 2002: 20-25).

Without new personnel or devices, the time of work completion of clinical laboratory results has reduced at the rate of 60% (Alegenth Health, Nebraska). Cycle time of the sterilisation of devices has reduced at the rate of more than 70% (Kingston Hospital, Ontario). Deaths from blood stream infections related to endarterectomy kit has reduced at the rate of 95% (Allengheny Hospital, Pennsylvania). Length of hospital stay has reduced at the rate of 29% and it is prevented to spend 1,25 million dollar for the buildings of new emergency (Avera, Mc Kennan, South Dakota). Operation revenue has increased by 808.000 dollars per year (Ohio Health, Ohio). Waiting period of patient in the orthopaedic surgery from 14 weeks to 31 hours (from the first examination to the operation) (Theda Care, Wisconsin). With the Workshops on Lean Rapid Improvement in 2004, 7,5 million dollars were saved and this amount was used for patient care (Kılıçarslan, 2016: 36). According to the managers of the intensive care department, the goal of this policy is that there is no problem that cannot be solved (Lummus, Vokurka, Rodeghiero 2006: 1065). Dırector assessment upon the performance of the personnels employed ın the hospıtals by outsourcıng method (Eriş,2017).

Lean Transformation in the Hospitals; Managers could not determine what was disorder before the lean. People may seem busy but they may be busy with the lean. By learning to determine the leans, they should find what is wrong in the details of processes. It is not likely to apply the lean everywhere and at a time. It is required many sources and attention, correspondingly, we will be distracted. It should be started to the lean in one field. To determine where to start, it is necessary to look over strategical factors and current problems. Provided that the satisfaction of nurse is low and the turnover rate of personnel is high, then it is necessary to start with decreasing lean in the inpatient treatment unit and eliminating the problems that bother nurses. As a result, we can provide a better patient care and lower workload. On the Table 5, percentages of the motivation of lean practices in the hospitals are given (Kılıçarslan, M. 2016: 96).A lean hospital should create collaborative relationships for all partners and shareholder including physicians, suppliers and payer organizations(kaptaoglu,2017).

Fields which hospitals has started the lean are: Laboratory, phlebotomy, food services, department of home health, outpatient clinics, Ambulatory surgical intervention, medical records, pharmacy, material management, ambulance services, emergency, inpatient medical/surgical units, injury treatment, catheter laboratory, patient planning, sterile service operations and during doctoral dissertation study; Kılıçarslan 2016 enabled a significant improvement in the all units by approaching lean hospital as a whole. Kılıçarslan who dealt the lean hospital as a whole and applied it to the all units observed many successes such as vision, strategy, cost in terms of both personnel and units. A lean hospital should create collaborative relationships for all partners and shareholder including physicians, suppliers and payer organizations. A leadership method and model, taught to superiors and managers, and applied by all leaders, should be adopted in the lean hospital.

2. RESEARCH METHOD AND FINDINGS

The aim in this study is to create a more rapid process by using lean practices and technics in hospitals. The tools and technics of lean production, created for automotive industry, should be applied to the other sectors (Herron & Hicks, 2008: 525). It is seen that lean reduces and productivity increases when the method of lean practices is applied in the health sector.

There is not any practices in Turkey yet. Uludağ University Medical Faculty Hospital has broken a new ground by starting lean practices in June 2012 in Turkey (Kuter, M. June 2012).X University Medical Faculty Hospital was put into service in 1964. It provides services for patients with 1041 beds. Also, there are 52 beds in the outpatient care units. The hospital, in which computer-based automation system and paging system are used, provides healthcare service with 298 doctors with academic title, 386 assistant doctor, 30 sub-branch assistant doctors, 560 nurses, 69 general administrative parts, 38 technical personnel and 137 allied personnel.

There 30 operation rooms in the hospital. They are designed according to the features of branched, using them, and equipped with devices that enable interventions for Neurosurgery, Otorhinolaryngology Diseases, Plastic Surgery, Gynaecology, Eye Diseases, Thoracic Surgery, Cardiovascular Surgery and Orthopaedic Surgery along with endoscopic surgical procedures. In addition, there are emergency laboratory (haematology, biochemistry, fresen pathology) and radiology (mobile conventional radiography us) unites in the operation rooms.

There are 12 beds in the intensive care unit and 8 beds in the cardiovascular intensive care unit.

Haemodialysis Unit is designed in such a way that training can be organized on haemodialysis and equipped with 8 dialyser and 3 for infected dialysis patient. With this settlement, 11 dialysis patients can get service. There is a patient circulation every 3-4 hours in a day. Also, there is bed-side dialysis with 2 devices. It is suitable for peritoneal dialysis.

Nearly 50 patients in the chemotherapy unit with 38 beds and 60-70 patients in the radiation oncology get radiotherapy and chemotherapy.

Emergency consists of 2 beds, 8 polyclinic (green code bed), immediate treatment unite with 8-10 beds, observation unit with 12 beds and intensive care unit with 6 beds. Emergency provides service with 6 academician doctors, 15 assistant doctors, 17 nurses, 10 emergency medical technicians and 17 personnel.

Proposal for Lean Practice

After the immediate treatment in the emergency, patients wait for the assessment of doctors from related units or branches. It takes time for doctors to come and evaluate the patient.

<table>
<tr><th colspan="2">Proposal for Lean Practice</th></tr>
<tr><th>Before Proposal for Lean Practice</th><th>Proposal for Lean Practice – Method of Visual Management</th></tr>
<tr><td>• Waiting for the doctor kicks up much more for emergency patients and their relatives.
• Staying in the emergency for a long time and not able to be directed quickly cause to prevent early response and delays in the diagnosis and treatments, and immediate treatment.
• Because patient is not transferred, s/he takes up bed in emergency for a long time. Due to the less of patient satisfaction and unnecessary waiting-periods, treatment is hindered.
• The lean of work force and time increase.
• Costs increase.</td><td>• By integrating consultation paging system with the automation system, pager should alarm from the time that doctor keeps treatment without the movement of patient until doctor from the relevant service comes and scans his/her card to the automation system. Healthcare professional should take action.
• There should be patient welcome equipment in the emergency and they should correctly direct patient.
• Automations systems should be established to provide a rapid communication between health personnel and they should be integrated with each other.
• Heath personnel should be trained constantly and get support about health psychology. (violence against health personnel, self-protection against intervention, crisis management)</td></tr>
<tr><th colspan="2">Expected Situation after the Lean Practice</th></tr>
<tr><td colspan="2">• Increase in the satisfaction of patient and personnel
• Accelerating many processes on the hospital automation system
• Eliminating unnecessary bureaucracy
• Giving adequate information to patient and relatives
• Elimination or reduction of workload and time lean
• Increase in quality
• Providing rapid work-flow</td></tr>
</table>

Our aim is to decrease the long waiting-periods especially during the most intensive work periods and increase the satisfaction scores of patient. When someone applies to emergency, the aim is to treat him/her by a doctor as soon as possible and keep waiting-period limited as far as possible. It is confirmed that a high amount of, nearly 75%, the longest duration of staying in the hospital (up to 7 hours) passes by waiting (without doing anything) when analysed the current process. It is calculated that current duration of staying in the hospital can be decreased up to fewer than 2 hours with an improved process by the lean practices. Here, it is observed that wasting time of patient is the highest and unnecessary movements.

Current Process Stages of Emergency	**Minute**	**Lean Practices Process Stages of Emergency**	**Minute**
Quick Admission	5.0	Welcome by Clinician	3.0
Waiting -Waiting for	20.0		
Triage	20.0	Triage – quick registration	10.0
Waiting – examination	29.5	Waiting - examination	13.5
Evaluation of nurse	5.0		
Waiting – examination	15.5		
First examination of Doctor and his/her demands	12.0	First examination of Doctor	10.0
Waiting and waiting for	45.0		
Completion of demands by nurse	10.0	Entrepreneurial - nurse	9.0
Waiting – examination	40	Waiting- Treatment-	26.0
Revaluation and assessment of doctor	5.0	Radiology and Waiting-period	15.0
Waiting – Waiting for the registration procedures	80.0		
Finalization of registration procedures	9.0	Finalization of registration procedures	5.0
Waiting –before discharge	90.0		
Discharge	15.5	Discharge	10.0
Total (minute)	400,5	Total (minute)	101.5
Hour	6,675	Hour	1.61

In comparison of procedures before and after the lean practice, an expected improvement is seen. The circulation speed of examination room and bed has increased. Waiting period of patient has decreased but quality of patient care has not decreased. With the improvements, it is expected that patient is examined in a quicker way and elimination of leans.

3. CONCLUSION

Today, people five more importance to health. This has caused the demand for quality care in the health care services to become widespread and revealed the result that we are selective about organization whose health care services we need.

Hospitals and their procedures are full of leans and inefficiencies. Unless a method is not applied for sustainable quality and improvements in the procedures, it would become more complicated. By evaluating how procedures are applied, the lean improves the

procedures. Instead of hiding problems, the lean increases the quality and productivity by finding permanent solutions.

While the Lean increases the satisfaction of personnel by preventing delays, it is an effective way to improve the patient safety, the quality and cost. The Lean supports money saving by creating an opportunity for the growth of hospitals and having more revenue. The Lean is the management philosophy that includes full participation of managers and personnel in continuous developments while going forward to perfectness.

There is not only one route map or recipe to be taken for the Lean journey of a hospital. For the problems to be solved, high-level leadership and the willingness of the front office personnel and managers within their procedures are essential. Starting with the transformation of field of an example is important in terms of proving the potential of the lean to the rest of the organization. Focusing on management system and sustainability of improvements, applying the Lean should not be a whim but a part of the future vision and strategy of hospitals.

Health services are different from other services. Patients do not have chance to try the services in advance. In addition, they cannot try the quality of provided services consciously because they do not have necessary knowledge and experience. There is a full dependency on health personnel in getting health services. In this regard, providing information to patients and their relative about their diseases and treatments, and proper goods/services depends on the management with the scientific methods and the participation of team (Kılıçarslan, M. 2016: 112).

REFERENCES

Aksoylu, S. (2014). Value Stream Costıng In Hospıtals Niğde *University, Journal of Faculty of Economics and Administrative Sciences, 7*(1), 260-272.

Aktürk, (2016) ‘*’Kurumsal Yönetim Çerçevesinde Uygulanan Etik Kurallara İlişkin Algı: Bankacılık Sektöründe Bir Araştırma* ‘’ Beykent Üniversitesi Doktora Tezi, İstanbul

Alkan, H. (2001). Role Of Cost Management At The Enterprıse Success And New Approaches To Cost Management (An Appraisal in terms of The Forestry). *Turkish Journal of Forestry, 2*, 177-192.

Balcı, B. R. (2011). Lean Thınkıng And Accountıng. *Dokuz Eylül University Journal of Institute of Social Sciences 13*(1), 39-58.

Bakkal, M., Bakkal, S., Yıldırım, H. (2018). Regional economic instabilities in turkey and ways of solution. *Journal of Social Sciences Studies*, *4*(15), 799-800.

Bakkal, S, Bakkal, M, Kantar, M (2018). The effects of 1 November 2015 elections in Turkey on macro economy. *TURAN-SAM*, *10*(37), 229.

Bushell, S., Mobley J. and Shelest. B. (2002). Discovering Lean Thinking at Progressive Healthcare. *Journal for Quality and Participation*, 25(2), 20- 25.

Chan, F. T. S. (2001). Effect of kanban size on just-in-time manufacturing systems. *Journal of materials processing technology*, *116*(2-3), 146-160.

Convis, G. (2001). Role of management in a lean manufacturing environment. *Learning to think lean, 01*, *1014*, 2001.

Detty, R. B., & Yingling, J. C. (2000). Quantifying benefits of conversion to lean manufacturing with discrete event simulation: a case study. *International Journal of Production Research*, *38*(2), 429-445.

Eriş,H (2017) . Director Assessment Upon The Performance Of The Personnels Employed In The Hospitals By Outsourcing Method: Sanliurfa.3(1),2149-6161

Efe, Ö. F., & Engin, O. (2012), Lean Servıce/ Value Stream Mappıng And Applıcatıon In

An Emergency Servıce *Journal of Productivity*, 79-107.

Ertaş, F. C., & Arslan, M. C. (2010). Lean Accounting. Journal of *Financial Analysis*, (102), 39-60.

Galsworth, G. D. (2005). Visual workplace: visual thinking. Visual-Lean Enterprise Press, Portland.

Graban, M. (Ed.) (2011). *Yalın Hastane (Lean Hospital)* (1st Edition). İstanbul: Optimist Publishing.

Groover, M. P. (2007). *Work systems and the methods, measurement, and management of work* (pp. 778-p). Upper Saddle River, NJ: Pearson Prentice Hall.

Herron, C., & Hicks, C. (2008). The transfer of selected lean manufacturing techniques from Japanese automotive manufacturing into general manufacturing (UK) through change agents. *Robotics and Computer-Integrated Manufacturing*, *24*(4), 524-531.

Kaptanoğlu,R.(2017) "An Application on Organisational Commitment and Emotional Intelligence" Balkan and Near Eastern Journal of Social Sciences, (IBANES) 2017, 3(3). http://www.ibaness.org/bnejss/2017_03_03/010_Kaptanoglu.pdf

Kılıçarslan, M. 2016, Sağlık Hizmetlerinde Bütünleşik Model Önerisi Yalın Sağlık (İsraf), Beykent Üniversitesi Doktora Tezi İstanbul

Kılıçarslan,M. (2017) Quality and Inpatient Satisfaction in Health Institutions X State Hospital Example, Balkan and Near Eastern Journal of Social Sciences , (IBANES), 2017, 3(3). http://www.ibaness.org/bnejss/2017_03_03/011_Kilicaslan.pdf

Kapila, S., & Mead, D. C. (Eds.). (2002). *Building businesses with small producers: successful business development services in Africa, Asia, and Latin America*. IDRC.

Özkol, A. E. (2013). Lean Thinking and The Leanr Record within the framework of Unified Accounting System: An Approach and Application Sample. *Dokuz Eylül University Journal of Institute of Social Sciences, 19*(1), 119-138.

Price, W., Gravel, M., & Nsakanda, A. L. (1994). A review of optimisation models of Kanban-based production systems. *European Journal of Operational Research*, *75*(1), 1-12.

Sultanov, F. (2010). Lean Supply Chain and its Importance for the Organizations. *Journal of Qafqaz University*, (29).

Şimşir, İ., Bağış, M., Kurutkan, M. N., & Oğuz, B. (2013). The Management of Healthcare Services..

Turan, H., & Turan, G. (2015). Lean Production Practices in the Health System in the Helath. *Health Care*, *2*(3), 127-132.

Yıldız, S., ve Yalman, A. G. F. (2015). Sağlık İşletmelerinde Yalın Uygulamalar Üzerine Genel Bir Literatür Taraması. *Uluslararası Sağlık Yönetimi ve Stratejileri Araştırma Dergisi*, 1(1), 5-20.

Wasti, S. N., Kozan, M. K., & Çinar, A. K. (2009). Antecedents of Buyer Firms' Relation-Specific Investments in Their Suppliers: A Study of the Turkish Automotive Industry. *METU Studies in Development*, *35*, 315.

Womack, J. P., Jones, D. T., & Ross, D. (1990). The Machine that changes the world. Rawson. New York. Elsinore, Denmark.

Womack, J. P. (2007). Moving beyond the tool age [Lean management]. *Manufacturing Engineer*, *86*(1), 4-5.

Womack, J. P., ve Jones, D. T. (2010). *Lean Thinking: Banish Waste and Create Wealth in Your Corporation*. New York: Simon and Schuster..

Womack, J. P. (2002). Lean Thinking: Where Have We Been and Where Are We Going?. *Manufacturing Engineering*, *129*(3), L2-L6.

Zerenler, M., & Rıfat, İ. R. A. Z. (2006). Analyze of Japan Management Mentality and Company Networks (Keiretsu). *Selçuk University Journal of Institute of Social Sciences*, (16), 757-776. Retrieved from http://www.ankemdernegi.org.tr/ANKEMJOURNALPDF/ANKEM_15_3_244_246.pdf on 11th November 2017