

# The Benefit of Implementing Lean Principles in Healthcare System

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**Abstract** — for many years, the healthcare industry was facing many problems regarding their patients, competition, safety, and cost of healthcare, insurance costs, liability, equipment management and time management. These all issue become most important for the hospitals to reduce the causes of deaths, to improve the efficiency, to detect the error, improve the time management and the reduction of cost to be competitive. There are many previous studies are being analyzed for the purpose of better evaluation of the topic that how the Lean and six-sigma approach influence the healthcare processes of hospitals. And the findings tells that the healthcare system, time management, customer satisfaction, cost management, process management, the workflow and many other factors are improved and enhance the capability of resources.

## 1 INTRODUCTION

In this study Lean sigma is the concept of management and it covers both lean and sigma. Lean means that the maximization of the customer value through the minimization of waste into the organization. While during the production, the management tries to fulfill the requirements of their customers through minimum resources. Key processes are the one thing that a company needs to improve, enhance, and provide the value to customers. The elimination of the waste into the whole process of value chain make reason for the creation of processes that required less time, capital, human effort, space and the resources for the production of services and products. For the process improvement, six-sigma is the technique and tool. In 1986, this approach is being introduced by the Motorola in Japan. The quality of process output increases through six-sigma and remove the defects by analyzing the causes of them.

### Lean six-sigma and health care

Six-sigma minimizes the variation into the processes of business and the manufacturing process. Through the combination of six-sigma and the lean, the concept results in the reduction or elimination of over production, transportation, defects, over processes, skills, motion, none utilized resources, inventory, improvement in capability and the waiting. Four things are important to be care for

and that healthcare, organization, six-sigma and the empowerment in the HORSE. Under this Horse principle the strategic management and the leadership is most emphasized things. For the purpose to lead the health care system into the right direction, the lean six-sigma is the first choice of this principle. Through the improved product, less reduction and the increased productivity the financial position of the company increases. This is the responsibility of an organization to take into account the health, development and the welfare of their society because they are impacted by the activities, environment, ethical behavior, transparent behavior and the contribution into the society. In the health care of the patients the defects means that the life and death of a person. A little wrongdoing and lack of management can lack for saving the life of a person. Life threatening errors can be reduced through the lean six-sigma. (Koning, Verver, & Heuve, 2006)

### Application of lean six-sigma in healthcare

The healthcare organizations adopt the management systems into the health care for the improvements of their services like TQM and CQI. These approaches were introduced and being used by healthcare to insure the quality of organizational culture and enhancement. For the redesign, a purpose of clinical and non-clinical processes the hospitals adopts these techniques. This technique is

being used to establish and manage a team who were working to identify the problems of the work processes and make strategically decision to improve these processes. The care practices of the hospitals are being relocated and improved through diverting the position of the functions like basic laboratory, medical record, admission and discharge, housekeeping, pharmacy and the material support towards the care of patients for the purpose to enhance efficiency of health care system. Six-sigma process is come through the TQM process into the healthcare efficiency and it is come into the operations to improve the healthcare system of TQM into the hospitals. The features lean six-sigma into the healthcare operations are the retention of customers, measurable project deliverable's, discrete deliverables, focus on customers, quality improvements, and the quantify results. (Bandyopadhyay & Coppens, 2005)

### **Example of health care problem**

The example of the situation before lean and six-sigma introduction is the report that was being released by the institute of medicines. By the medical mistakes of healthcare professionals every year, almost 100,000 people die in America. In addition, this is the leading cause in the America for the high rate of deaths. Moreover, the mistake mostly happens into the diseases of heart, stroke, cancer, and lung. In the America most of the deaths were the cause of the poor management of the organizations and the error or flaws into the activities and operations of hospital's and this was a big issue for the hospitals to minimize these errors before the introduction of lean and six-sigma approach into the healthcare system. There were a great need to improve the efficiency of procedural errors, improvement in healthcare medical centers, and the hospitals. The external forces are pressuring the hospitals to reduce their cost, which were so high before the technology of lean and six-sigma. So this was the difficult question for the hospitals that what to adopt by which they can reduce their cost and enhance the margin. So the situation before

the lean and six-sigma of the hospitals were bad due to lack of their effective and efficient process that only for customers not any extra activities. (Niemeijer, Trip, Jong, . Wendt, & .M.M., 2012)

### **Main issue**

The main issue into the health care was that almost 100,000 Americans were dying because of the poor and bad procedures of the health care system into the hospitals. The main issue of healthcare were that the patients facing delays in the processes of healthcare, errors in medical procedures, unsafe delivery, and ineffective care of patients. Patients do not had any other choice and they have to rely on their healthcare providers even they are not satisfied by their operations of medicine and healthcare. (Punchaipetch † & Liangrokapt, 2012)

### **5. How lean six-sigma improve the health care system:**

The lean and six-sigma process improves the healthcare system for the betterment of hospitals and their customers as well. The satisfaction of the patients increase forms the application of Lean and six-sigma process because it was considering now as the customers not patients. Through this system, they improve the identity of the customers for their hospitals as the first motive of the healthcare places to satisfy their customers. Now the patients are choosing their medical provider through their quality measurements, and they have more choices for the treatment of their diseases. The staff of the hospitals are now focusing on the views of their patients and improving their services according to their problems and errors identification. (Taner & Sezen, 2007)

The hospitals are using the different measures for the efficiency improvement and customer's satisfaction as six-sigma approach, patient's perceptions, and the improvement of outcomes of patients. Customer's perception is being identifying by the hospital's management through conducting interviews, surveys, and

focus group. Through this, qualitative procedures they are determined the expectations and the requirements of their customers. For the measurement of the level of satisfaction of their customers they filed the questionnaire form them and evaluate their level of satisfaction or dissatisfaction. Observation method is also being used by the staff to evaluate and identify the level of satisfaction of their customers form their services.

Through the improvement into the outcomes of the patients can improve the position and efficiency of hospitals and healthcare activities. Now they are working in teams for the better outcomes, customer's satisfaction and the enhancement of efficiency of healthcare system. After the application of Lean and six-sigma approach, the healthcare problems are reduced through improvement in the waste and errors of services and the reduction in the variation of the services for patients. The healthcare system are giving the cross training to their staff for better interchangeability in the process of the hospitals. Through the lean and six-sigma approach now the doctors, nurses and the admin staff are being provided the balanced work and distributed equally among them to minimize the awaiting time of patient and enhancing the ability. The approach of Poka Yoke is being used into the six-sigma under which the designed procedures are provided to the employees for the prevention of errors and mistakes in their work. For the attention and the correct actions, the hospitals are using the visual signals and control. Total productive management approached is being used by the hospitals for the better and efficient working of equipments for operations. (Stamatis, 2012)

A quick and improved setup is being established into the hospital under the leans and six-sigma approach for the operating rooms, cleanup times, personnel prep, MRI machines and the equipments. 5S approach the hospitals are using for the saving of time that the staff of the healthcare was wasting for the search of supplier, and the medical information. Workflow of the nurses, doctors and

the technicians are maintained by the hospitals for the better sequence of the services and integration of services for the customers. The time for the each task is defined now by the management of the hospitals for each individual to save the time and use the all resources those are going to be waste. A chains is being described now under the pharmacy procedures of hospital is started form the suppliers, pharmaceutical manufacturer, distributor, pharmacy and customer. The resource utilization of the hospitals for healthcare programs is being made to satisfy the customers. The issue of the scheduling for the timings is being solved through a proper time setting by the management of healthcare of hospitals for the customer retention. (Schweikhart & Dembe, 2009)

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