SOME ASPECTS CONCERNING OF IMPLEMENTATION OF LEAN MANUFACTURING IN THE MANAGEMENT OF HIGHER EDUCATION

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Abstract: This paper refers to the implementation of Lean Manufacturing process in a higher education institution taking as a case study of the Transilvania University of Brasov secretarial service. The paper presents the Lean Manufacturing concept features and the techniques and tools used. Then presents the assumptions on which the case study started. It presents an analysis of actual secretarial work of the institution and steps taken to implement the concept of Lean Manufacturing.

Keywords: Lean Manufacturing, educational services, quality of service, customer satisfaction.

1. INTRODUCTION

One of the most used methods in the world for the continued growth of the performances of an institution is the Lean Manufacturing method of management. Reducing costs and maintaining competitiveness is a challenge for many companies or institutions. Without innovation and without the use of several methods which lead to minimum resources for maximum results, many institutions may fail in crossing an economic crisis like the one we are experiencing at the moment. Implementation of Lean Manufacturing process is beneficial at times just because it has the consequence of eliminating waste in the value streams and increase efficiency.

One of the definitions used in explaining this concept says that Lean Manufacturing is the creation of "value without loss" (Hobbs, 2003) the purpose of its usage being to optimal coordinate all activities involved in creating value, while eliminating any unnecessary steps.

2. LEAN MANUFACTURING CONCEPT FEATURES

The basic concept in Lean Manufacturing, is the value that a company/institution generates for the client, while all activities that do not add value for the customer are seen as a waste, making the subject of an optimization effort, simplification, reduction or total elimination.

Fundamental concepts of Lean Manufacturing are: quality, cost and service.
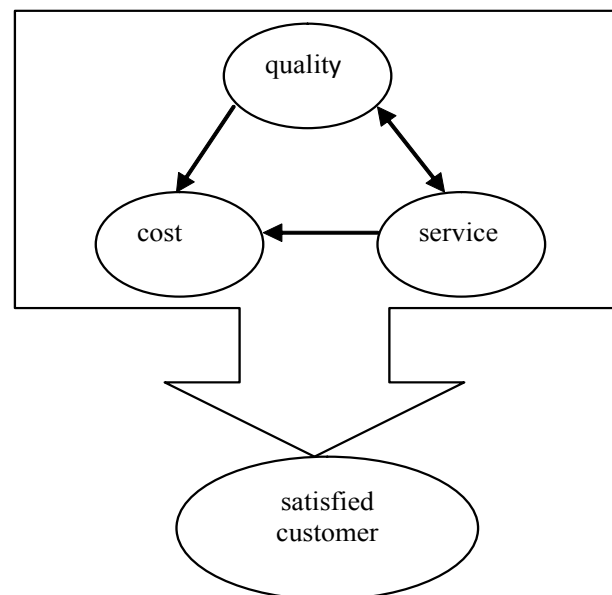

Fig.1 Lean Manufacturing concept features

Improving services and reducing costs leads to the growth of the customer satisfaction. At the same time, it is to know how fast it would be provided a customer service and how quickly I can provide while increasing quality and reducing costs. These three concepts are the core concept of Lean Manufacturing.

The major benefits of implementing Lean system at the administrative level are reducing order processing errors, streamlining order execution in order to reduce waiting time, reduce the total processing time of information in all administrative departments, increasing the number of orders processed by the same operator documentation requirements for safe outsourcing of business functions.

In Lean Manufacturing is mandatory to understand that the value is given by the customer's perception. When a customer wants something, he wants his application to be satisfied in desired amount at the destination where he needs as cheap as fast, as good as also, and accompanied by services allowing its using from increasingly performing.

Any deviation from these expectations produces dissatisfaction and affects the price and the cost of losses even if sometimes to the customer, however, often reduces company profits. Some Lean Manufacturing tools that can be used after a careful assessment of the initial situation and proper adjustment to the activity are:

Process unit - Type of production that involves the processing and the movement flow components from a work station to the next, piece by piece. It can be applied to services also - for example, you can organize a treatment process for refund of tuition fee to perform the activities required in a continual flow from the receipt and up to customer satisfaction. The opposite is batch production, which means that on the stream processing applications, a man performs a specific operation for many applications, which then transmits them all in one post following the flow of the process, which runs other parts of the required operations, and so on. Out of the flow will be more demand satisfied customers who will be expected to complete the whole lot of applications, not only for theirs. The unit can run on production lines or cells.

Kanban - Production control back through cards, signs, containers, boxes, buffer stocks, etc., which triggers movement downstream process flow of products between work stations (Hobbs, 2003: 28).

Visual management - The set of methods and means used to facilitate the carrying out of and to highlight the losses to be eliminated. It includes visual presentation of the elements that must be known by everyone for the purposes of the tasks, but also visual control means to facilitate the decisions in case of deviation from the normal situation.

5S - Methodology for organizing, cleaning and discipline at the workplace, with beneficial effects: improving the safety and productivity, better maintenance, better quality. Includes: 1S (Seiri) Sort and Filter (Organization), 2S (Seiton) Stabilization (Order), 3S (Seiso) Brightness (Clean), 4S (Seiketsu) Standardization (Compliance), 5S (Shitsuke) Sustaining change (self-discipline).

Value Stream Mapping (VSM) - Sitemap value stream mapping and value stream map means the graphical representation of material flows, people and information which leads to a family of products.

Reduction of manufacturing change - During the change of production of the product "A" into the product of "B" in a given working position - the time from the last good piece of "A" to the first good piece of "B". Changing manufacturing includes several components: the actual work done on work equipment for the replacement of the devices or making some adjustments, the preparation may make changes to the manufacturing settings at the production line. And in an equivalent situation arise the administrative "change" manufacturing, such as uploading a file from your desktop to your laptop before you go to make a presentation to a client or preparing a presentation folder before the arrival of a potential customer, resumption of activity from arrival of lunch, etc.

Kaizen - Japanese for "continuous improvement by involving all". It is a methodology of systematic teamwork to solve problems and implement solutions for improvement. To achieve the desired results in labor office or in other service provider organizations must consider at least three different perspectives on Lean, namely: Lean as a methodology of action, Lean as a set of tools to improve processes, Lean as a philosophy of life (Hobbs, 2003: 80).

By applying Lean principles and tools in an educational institution, the objectives can be achieved: simpler, better, faster, and more efficiently.

3. LEAN IN THE MANAGEMENT OF HIGHER EDUCATION

Every organization has some goals and some strategies implemented through a series of processes, in order to achieve results.

Lean involves among others a set of tools to improve processes and operational performance, but also their continuous improvement methodology. Thus, all organizations, including those providing educational services, can benefit from advantages through the application of Lean methods for power management.

One of the fundamental tools used to apply the principles of Lean is to standardize processes so as to take up and to generalize best practices for achieving a task, with visible results into the obtained results - with lower consumption of resources (time, material resources, stress, etc..) but with higher satisfaction for those involved (rewarding for those in the system, especially for service users).

Doing a more complete analysis, we can identify key processes, problems and chronic losses on realization flow current activities, leading to the choice and adaptation of appropriate methods of improvement, whether it is visual management application for a proper communication (within the university, and the students) to establish more reasonable activities or exams - focusing on activities that add value to the student - using methods of planning and programming activities to balance and streamline tasks performed or other application specific methods to reduce losses.

In the case of services, there are a number of losses, which can be inserted into one of the following seven groups: repeated checks unnecessary, achieving the same task repeated by two people who doesn't communicate with each other; standardized work processes, disorganization, frequently changing priorities; accumulation and use of materials and unnecessary information -

-irrelevant, redundant, outdated; sluggishness and resistance to change (syndrome "As we have always done"); failure to use acquired knowledge - poor communication, non-expanding solutions for improving tested in practice, lack of knowledge implied valuation framework; expectations due to overly complex procedures, unnecessary delays by participating in discussions, levels of responsibility and delegation unclear inappropriate; decisions, without an analysis of available data and the possible consequences.

Lean means saving the available resources, better performance, greater satisfaction for those within the system, but also for the beneficiaries, improved quality results. But the possible results obtained by applying Lean principles and tools may not be relevant as long as those involved in producing education (civil servants in the ministry, university departments coordinators, teachers, union leaders, etc..) do not become aware of the need of not wasting the available resources and cannot find the motivation to find solutions for continuous improvement at every level of activity.

The activity of a particular importance in an organization is the secretariat. The secretariat of the Transilvania University of Brasov is divided into specialized departments. It takes place at different levels, both in the central departments of the University and the faculty. Therefore, structure, organizational form, extent, number of functions and some functions are different.

Secretariat is considered as the management interface higher education institution with staff and with people outside the organization (candidates for admission, students, graduates) and also represents (in some cases) a doubling of the auxiliaries departments by taking on specific tasks at the department level. Therefore the secretary takes a series of duties on the administrative and public relations activities.

A series of losses identified through a comprehensive analysis of the secretarial work of the Transilvania University of Brasov, using the 7 categories of typical losses (MUDA), defined by Ohno and included in Lean Manufacturing methodology are: overproduction, over-process defects, transport, waiting, stocks and unnecessary movement (Masaaki, Dorobantu 1997:77-89).

Overproduction - registration documents at the registry office using input-output register classic pre-printed format, with complete incoming and outgoing documents manually without being able to trace the route by the applicant for approval of documents.

To eliminate this loss would be useful to implement a registry system for electronic document management that has as advantages:

-documents management, eliminating the loss of documents;

-provides management structure able to access independent statistics and situations regarding the smooth running of the institution documents;

-ensure the safety and discipline in working with documents;

-reduce retrieval of a document according to different criteria or to obtain a situation;

-tracking status and how to resolve claims, including those urgent warning;

-allocation of departments and employees documents;

-streamline operations;

-eliminates human error;

-reduce operational costs.

Over-process - high consumption of resources beyond what is necessary and sufficient to achieve a specific task: the existence and use of a large number of documents in print throughout secretarial service and beyond; completing the same data in several situations - for example, the identification of the student enrolment is completed in the application for admission, then in each contract year of study, and in the student management application, and finally in the application writing diplomas and certificates.

The solution would be to carry out a single database; completion of data relating to both student academic situation management application and evidence of student as well as in the school register and the summary of notes that are currently completed manually, not as a report generated from the computer system; completing data relating education plans and its member of functions in two different applications, the solution for this problem being given by the filing in of a single application data;

double evidence of the situation by pursuing their tuition fees by both faculty secretariat as well as the financial accounting service; communication situation both by secretarial school students as well as through the university portal.

A solution to solve this problem could be the introduction notes into the portal by teachers immediately after the examination, thus solving the problem of waiting.

Defects - mistakes, errors, non-compliance, non-compliance with contractual requirements, such as partial and inadequate operation of the portal modules used for communication with students.

Transport such as:

-visits of the staff within the Registry rectory/faculty without a timetable established for the collection and delivery of mail;

-shifting the students to social services for declaring the bank account to be transferred the stock or equivalent passes and train tickets and/or urban transport, although the secretariat of the faculty has the opportunity to add their data management application and registration of students;

-shifting the students to a particular office (each faculty is ascribed a certain cashiers) to pay tuition fees, examinations, and so on, although this can be done at any point of collection of taxes;

-shifting the graduates residing in Brasov to the social services for proper visa liquidation sheet, as this is required by the faculty secretary, although data supporting exists at the secretary concerning the student place of domicile;

-transportation of documents from the University archive to the services that requires them, whenever needed.

Waiting: waiting for the arrival of documents and for writing the diplomas from colleges and departments, and especially of their signature by authorized persons (dean, rector); waiting for finding repeated application to the registration of the university.

Stocks: materials and outdated messages kept long time on the portal used to communicate with students or on the faculty website, which do nothing but to complicate the use of the still current ones; Ordering and storing a large number of forms of diplomas and certificates which subsequently become useless because they change almost every year or because the ministry name is changed whenever the person changes to its management.

The unnecessary movement such as: business disruption faculty and staff of the secretariats bureau graduating and a nonexistence planning of the phone calls and responding to non-office hours; searching for information/files in the list of materials used for communication on the portal with students - as there is a file naming rule (to be easily found by users) and the portal does not provide facilities for sorting, searching a file into a list of dozens of files is not always a quick and enjoyable activity.

A different useful tool for organization of the activity of the Secretariat 5S. The name comes from five Japanese words starting with the letter S, respectively *Seiri*, *Seiton*, *Seiso*, *Seiketsu* and *Shitsuke*.

The 5S process includes 5 steps (Masaaki, Dorobantu 1997:67-73).

1.Seiri (Sort): The first step of the process refers to free up space to work and eliminate all unnecessary materials and articles (for example, programs, files, forms, certificates wrong, accessories, unused materials, and so on). Sorting impacts the mentality of the people who have to give up the habit to collect and preserve all kinds of useless materials and objects. After applying this step we have separated the useful things of the useless.

2.Seiton (Stabilization order). The second step of the process refers to the efficiency and reduces the time required to access the equipment and work tasks. This step is useful in storing documents in a predetermined location in a logical order to facilitate their use to be easily accessed or brought back to the same place faster (eg school register, the summary notes, catalogs notes, etc.).

It must be established fixed locations such as modular racks, cabinets with transparent doors, panels, floor markings for doorways, and their storage being realized according to the frequency of use. If everyone has access to any document or material the workflow becomes more efficient and, therefore, the staff becomes more productive.

3.Seiso (Brightness). The third step of the 5S process consists in a cleaning job, making him "shine". Cleaning should be done by each employee. All units which form a job must be cleaned, without exception because any deviation from the established order in the second S can be readily observed. Quality can be achieved only in clean working environments. Also unnecessary items at workstation hinder and reduce the productivity, increasing the possibility of mistakes.

4.Seiketsu (Standardization). The fourth step of the 5S process is to define standards (rules, customs and procedures) to which personnel must measure and report the maintenance of order and cleanliness. An important element is the visual management Seiketsu. Color-coding and standardized in a uniform manner of the various elements can be an effective way of identifying abnormalities present at a workplace.

5.Shitsuke (Supporting change). The last step of the process means discipline and respect for the 4 S above. Assume shared commitment of all staff to maintain order and to practice as a first 4S currently working. Shitsuke foundation is to eliminate bad habits and generalization of good practices. Without the support of change, it can quickly return to a situation similar to the first.

5S is a task for several weeks, and the advantages of this method is applicable only occur when all five S.

Reaction time at the request of a student's phone, graduate depends on the time required to retrieve useful information.

A study done in 2005 in the U.S. show that 50% of managers interviewed considered the order of desk employees as an addition to their promotion and that 51% were doing a correlation between the cleanliness of the office and productivity.

But at the same time, 49% of these managers are considered "professional and relaxed" if the tables had ordered several stacks of documents, 31% accepted an "organized chaos" on their desks, 13% belonged to a "creative type" of manager while only 7% considered themselves to be "organized and orderly."

"The documents in an office tend to multiply until occupies the entire space available" (law of Douglas). Therefore, 5S is the best instrument for fighting clutter and unnecessary accumulation of data and objects for service providers. Benefits permanent application of this process were observed by increasing productivity by eliminating time searching for documents, can more quickly identify problems and quickly identify nonconformities.

4. CONCLUSIONS

Implementation of Lean Manufacturing concept presents an approach that helps identify losses duration of the secretarial service and increasing productive capacity while reducing costs. Implementing Lean concept focused on optimizing working conditions through continued compliance with cleanliness, order and discipline, standardization of work procedures, improving service quality and reducing all forms of waste and rational use of working areas.

Lean means saving the available resources, better performance, greater satisfaction for those within the system, and increased quality outcomes for beneficiaries. But the possible results obtained by applying Lean principles and tools may not be relevant as long as those involved are not aware of the need not to waste existing resources and cannot find the motivation to find solutions for continuous improvement at every level of activity.

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