

Waste Identification Lean Approach in effective education system

Case of Albania

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Abstract

The continuing growth and expansions incorporated with technology, has generated variations in tastes, behavior and demand. Thus the changes need management restructures to reduce the costs of adaptation.

Lean principles as cost reduction orientated possess the sufficient elements to fix problems in order to reduce wastes and increase the values. The theory application can be used also in education sector in order to increase the quality and reduce the costs. Thus, the aim is to identify the improvidences (waste) and propose several applicable solutions. It is based on interviews and researches to the teachers working in private schools for at least 5 years. This study is being conducted in Private high school in Albania.

Keywords: Education System; Development; Lean Approach; Waste

Introduction

According to educationalist, teaching and learning are categorized as the most critical activities in schools. However, the development of these activities is fundamentally determined by financial means and budgetary needs. "Without good budgets, there are no schools". (Thompson and Wood, 2005, p.136)

A well-defined way to reduce costs can serve efficiency oriented programs dealing with issue of waste and other social topics. Therefore, in this study, Lean approach has been considered as a method of reducing costs and increasing the quality of education. This approach defines the wastes and the possible solutions how to diminish them.

Lean manufacturing can be defined as a business system and a generic process management philosophy with a systematic approach to eliminating waste through continuous improvement (Womack and Jones, 1996; LEI, 2008; Surya, 2004)

The background of Lean practices date from late 19th and early 20th century in industrial engineering. Lean practices have progressed over the decades and since then became much easier for non-specialists to understand and use. Therefore, the Lean management system can be applied by everyone without the need of specialists.

Methodology

This paper studies the wastes determined in a private high school in Albania. The methodology of this study is based on interviews and researches to the teachers working in private high schools in Albania, and also 8 wastes are defined according to their opinion and possible solutions against these wastes are being discussed.

In a private high school having 73 employees the interview was done with 54 teachers that served as a teacher for at least 5 years, and worked in different countries or abroad mentioning the lean manufacture wastes to and solution proposals have been made across the board. Teachers were interviewed individually; wastes and possible solutions have been addressed. It should be mentioned that these solutions vary according to educational model applied. So this general educational model was determined to be uncommon.

As mentioned above the lean approach focuses on waste detection and elimination. Following this approach leads to effectiveness. Therefore, the aim of this paper is the application of such approach in effective education system. Below, as a result of interviews and researches with experienced teachers working in a private school, there are wastes (improvidences) in one side and a suitable or agreeable lean model as a solution in the other side. Moreover, a part of seven wastes, it noticed the eighth one. Guided by the principles of lean and the methodology used, the followings represent 4 wastes in education e respective solutions.

Waste 1: Proccessing

- Do extra work using customers without paying
- Too much examination
- Too many approvals
- Using CC while sending e-mails
- This means, to invite additional people to meetings. Regarding to education aspects some of the deficiencies can be given as in bellowed shown ingredient form.

In education:

- Over repeating understood topics.
- 40 minutes just Lecture.
- An over process in order to see the student's general situation.

According this waste we can say *Unnecessary Detail* and the following waste gives the suggested solution.

Solution to waste 1: Processing

- While preparing the annual plans, the difficulty and simplicity of the topics should be taken into consideration. Therefore for an easy topic is prevented the waste of time.
- In an example of organized subject-course hours of 30 minutes topic and 10 minutes application should be done: practice, the test solution, and the experiments or projects design applications.
- The example of teachers required to fill in register. Class notebook annual plan, daily plan documents, are the cause of a big waste of time. Teachers can create their own courses with the help of the e-book. In addition, daily monitoring is provided by the teacher.

	PROCESSING	
OLD MODEL	NEW MODEL	EARNINGS
Annual deficiencies in plans.	Organizing the annual plans according to the degree of difficulty	Ability to obtain an array of class hours, and annual plans to be completed by the end of year
Application of the course is 40 minutes	30 minutes lessons 10 minutes application	Increase the efficiency of course
Document filling redundancy, spaces in registration system	E-school system	Reducing wastage of time
Intensive Curriculum and unnecessary repetitions	The update of curriculum to eliminate duplication	The reduction of unnecessary duplication and waste.

Table 1: Processing

Improvidence 2: Motion

- Doing unneeded moves to complete the tasks
- Continuous used objects are not present in the working environment
- Not having clear idea what is in the files and drawers and continuously searching for something. Regarding to education aspects some of the deficiencies can be given as in bellowed shown ingredient form.
 - Lack of adequate Teachers room equipment
 - The lack of hardware in classes
 - The lack of administrators' room equipment
 - The structure of the school buildings

According to this waste we can say *Irregularity* and the following improvidence gives a suggested solution.

Solution to waste 2: Motion

- Providing automatic regulation of course environment by creating smart classes. Thus teachers by providing conditions to the course can prevent the wastage of time; their concentration can give more to the course.
- The prevention of time wastage by meeting the schools staffs' needs. Example: Having the restroom near their offices, offering coffee or tea during breaks, fulfilling staff needs for printing and photocopying in their offices.
- Documents should be transferred in a digitalized environment (the digitalization of documents) and an easier access should be.
- System like networks should be used in order to speed up the communication within the school.
- Monitoring by camera should be in order to provide a faster inner control of the school
- Should be reduced the number of floors of school buildings. Instead of 5-storey school buildings a long two-story buildings should be created.

	IRREGULARITY-MOTION	
OLD MODEL	NEW MODEL	EARNINGS
Standard Classroom Environment	Smart classes	Prevent the unnecessary movement
Inadequate building structure	Well-designed buildings structure	Prevent the unnecessary movement meet easily the needs
Archiving system	Digital system	Gain time, to forestall unnecessary movement
Contacting problem	The creation of Internal Communication System	Accelerating communication, stop unnecessary action
Problems in in providing in-school disciplinary	Camera system	Reduction of movement by providing in-school corolla.

Table 2: Motion

Waste 3: Waiting

- To wait for a person, answer, device, knowledge.
- Failure to create a standby device
- since it is not a cross-training system, personnel cannot take the place of somebody that is busy and does nothing.

Regarding to education aspects some of the deficiencies can be given as in bellowed shown ingredient form

- wait for the teacher
- Student’s wait
- Technical means waiting
- The lack of necessary equipment in class
- The education should start after commence of character.

According this waste we can say *Waste of Time* and the following improvidence gives suggested solution.

Solution to waste 3: Waiting

- Course programs should be organized; for example a teacher having course 2nd and 7th hours. The period between can increase the stress and is wastage of time.
- The example of late start of schooling is age 7. This education system can take also age 5 and is provided more efficient use of children between the ages of 0-6.
- In cabinet system the controlling of the tools and materials needed that have been already checked is a waste of teacher’s time

WASTE OF TIME-WAITING		
OLD MODEL	NEW MODEL	EARNINGS
Problems ins course hours alignment	Regulation of course hours	Prevent the wastage of teacher time
Later start of schooling years	Early start of schooling years	More efficient use of 0-6 age
Class system	Cabinet system	Meeting quickly the needs
Waiting for tools/Material Distortion / Cause Problems	Preventive Maintenance /Autonomous Maintenance Plans	Removal of waits

Table 3: Waiting

Waste 4: Usefull Capabilities and Facilities

- Lack of trained staff
- Lack of physical activity to enhance the performance
- Missing of intern training programs
- The low status of the teacher
- Improprate follow-up relation between parents and students.
- inability to provide the student with psychological support

Solution to waste 4: Usefull Capabilities and Facilities

- Creation of green schools so saving light bulbs and motion-sensing mediators with thermostatic valve, and the pressure will reduce taps to be fitted. According to research, this equipment can reduce 25 percent of consumption. Also it can benefit from solar energy structure tune the school buildings.
- Presence of teacher assistants, that is able to provide psychological assistance and also to serve as good examples
- Establishment of a good dialog between parents, students and teachers. For example the spread of visits to parents, such as parents' awareness seminars.
- Provide educational activities; increase the numbers of clubs, and allow the opportunity to learn about the capabilities of the presentation in courses.
- For success should be provided economic support to the teacher concerned about extracurricular and curricular activities.
- The school staff should sign one year contract to meet all their needs.
- Should be prepared an environment where teachers can self-develop and an exchange freely information.
- Teacher Examinations
- Monthly education and training seminars for teachers should be done.
- There should be Trainee teacher training programs
- The teacher's psychology should be understood in right way (death, birth, illness, psychology, etc.)

Shortly this can be summarized in the following table:

USE FULL CAPABILITIES AND FACILITIES		
OLD MODEL	NEW MODEL	EARNINGS
The current standard school buildings	Green school model	Energy-saving
Model of class teachers	Model of class teacher and assistant teacher	Give to the students class and psychological support
Indexed student education	Parents' Education into the value-added	To check the students for success and a better recognition
The standard teaching	Model of social activity	Valuing the students ability and providing a correct orientation
Standard salary	Economic support to encourage	Increasing the success of students from the basis
Permanent System	Limited contracted staff	Increasing the success of a one-year
The continuity of profession without an examination	Branch exams	Better quality, more recent positions continuity
General seminars	Monthly education and training seminars	Improving the quality of education at the school.
Trainee teacher recruitment	Trainee teacher training	Creating capable knowledgeable staff
In-school support	Individual psychological support	Personal problems apart from school, and increasing the success of students from the basis

Table 4: Use full capabilities and facilities

Conclusions and recommendations

The implementation of lean practice in education or even other areas will bring benefits and will be more successful. Consequently the productivity is increased since there is a waste elimination process. In order to be effective, an entity must be arranged with a proficient and combined workforce that is willing to accept changes. Employees have more time to focus on quality and using less resource.

Lean principles direct an organization toward efficiency. Therefore in education system the quality and proficiency of the lessons will improve at an inexpensive cost. Also seen from the study above such strategy would reduce the space required and time to achieve the objectives and will allow more trained teachers to better adapt to the latest changes in technology.

Implementing of lean approach can be complicated during the application. Worth to mention that, firstly there must build a culture where learning and continuous improvement should be the norm.

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