

Implementation of Lean Service on the process of training services at PT. TUV Rheinland Indonesia, Academy and Life Care Division

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Abstract - Lean service is a systematic approach to identifying and eliminating waste to create an effective and efficient internal service system and improve service to the customer. The Purpose of this paper is to determine non-value added activity that inhibits business processes and determines improvements in the process of organizing training at PT. TUV Rheinland Indonesia Business stream Academy and Life Care. The research uses the Value Stream Mapping method with a lean service approach in seeking to reduce/eliminate waste by observing, interviewing and brainstorming with the team within the business unit. The results of the current state mapping, it shows that the existing business process has a lead-time of 104 days from the start of the order until the certificate is sent to the customer. The results of the implementation of the lean service described in the future state mapping occur an improvement that is a reduction in lead-time to 51 days or a decrease of 51% from before the implementation of lean service.

Index term - Value Stream Mapping, Lean Service, Waste, Current State, Future State, Improvement, Training

I. INTRODUCTION

The increasing number of organizations that obtain quality, environmental and other management system certification in Indonesia is also a driver of the increase in service providers in the field of management system training.



Fig 1. Data The number of companies with ISO 9001 and ISO 14001 certification in Indonesia.

Source: ISO Survey of certifications to management system standards, <https://isotc.iso.org/livelink/>

This situation encourages the needs of the organization to improve the competence of its workers in relation to the management system. However, with the increase in training

providers, the level of competition is increasing high, especially in terms of competition, training topics, training methods offered, the quality of the instructors, accuracy in capturing customer needs and expectations and also in terms of price competition.

From the competition, it requires excellent service, both in terms of internal processes (productivity, SOP, employee competency, process speed), processes during training services, pricing processes, external and other provider control processes. By optimizing the performance improvement of these processes, training providers can provide excellent service, increase customer satisfaction and be able to compete in the industry..

Likewise, with PT. TUV Rheinland Indonesia, which is one of its business units engaged in management training services, namely the Academy and Life Care division. The phenomenon that occurs is in the last three years the number of in-house training requests has increased dramatically, which is around 185% but with the limited number of personnel working on internal processes, this has an impact on the lead-time of the training process. Data from January to June 2018, the time needed to complete a training project is an average of 124 days or 3 months.

Table I. Lead-time data of In-house training process

Month	Lead Time Order to Training (days)	Lead time training to Cert sent (days)	Lead time Order to cert sent (days)
Jan	26	44	70
Feb	8	92	100
Apr	35	163	198
May	41	103	144
Jun	36	75	111
Average	29	95	124

Source: TUV Rheinland Indonesia academy and life care division (2018)

Due to the importance of providing excellent service to customers, therefore lean implementation in TUV Rheinland Indonesia - Academy and Life Care used to improve the process to be more effective and efficient by eliminating waste in the process so that it has a positive impact on customers. Lean, which was previously widely used for manufacturing, is also widely used for service industries called lean services, but has the same concept of value-creating activities, eliminating waste in the service process and making value added through the system without disturbance. Globalization encourages higher productivity, lean applications in the service sector are needed to reduce

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operating costs, development time, transactions, approvals, increase flexibility, which allows adapting more quickly to customer demand. Currently, Lean successfully applied in the non-manufacturing sector such as hospitals, banks, education, government, administration, health, and insurance. The purpose of this research is to analyze how much the effect of optimal internal processes on the acceleration of the In-house training process, analyze the factors that can influence the acceleration of the training process and provide a more effective and efficient process flow in terms of the training process.

II. LITERATUR REVIEW

Lean is a continuous effort to eliminate waste and increase the value added of products (goods and/or services) to provide customer value. The aim of Lean is to continuously improve customer value through a continuous increase in the ratio between the value-to-waste ratio. A company can be considered lean if the value-to-waste ratio has reached a minimum of 30%. If the value of the value ratio for the waste of a company has not reached 30%, then the company is referred to as an un-lean enterprise and is categorized as a traditional company. The lean concept that is applied to the whole company is called lean enterprise, lean that is applied to manufacturing is called lean manufacturing, while the lean concept that is applied is called lean service. (Gasperz, 2007).

This Lean Thinking concept was initiated by the Toyota production system in Japan. Lean was pioneered in Japan by Taichi Ohno and Shigeo Shingo Sensei where the implementation of this concept was based on 5 main principles (Erwin Rauch et.al, 2016) namely:

1. Specify value: Specify a value from the customer's point of view. Identify and map the Value Stream: Identify all the step in the value stream for each product family eliminating whenever possible those steps that do not create value.
2. Create flow: Creating values creating steps occur in tight sequence so that products will flow smoothly toward the customer.
3. Respond to customer pull: As flow is introduced, let customers pull value from the next upstream activity.
4. Pursue Perfection: As value is specified, value streams are identified, wasted steps are removed, and flow and pull are introduced, begin the process again and continue it until a state of perfection is reached in which perfect value is created with no waste.

One of the important processes in a lean is the discussion of which functions provide value added and which do not. Activities that do not provide added value can be eliminated. However, this time we usually find in the field there are activities that do not provide added value but cannot be eliminated. In this case, there are several activities according to Hines & Taylor (2000), namely:

1. Non-Value Added

All product or service activities that do not provide value added in customers' eyes. This activity is called waste which must be targeted to be immediately eliminated.

2. Nessacery But Non-Value Added

All product or service activities that do not provide value added in the eyes of customers, but changes need to be made to existing processes. This activity is usually difficult to eliminate in a short time, so the target must be made to make changes in a long period of time.

3. Value Added

All product or service activities that provide Value Added in customers' eyes.

III. METHOD

This study aims to design a lean system in the process of organizing training services with the longest lead-time to reduce or eliminate waste by using the value stream mapping method. The research and study approach to the company carried out using quantitative and qualitative approaches by means of observation, interviews and literature studies, wherein this approach quantitative data analysis carried out. The population taken in this study is the lead-time for the process of receiving orders until the issuance of certificates in the period December 2017 - November 2018. Data that has been collected, and then processed, researched and arranged so that it can be used in research. Time is calculate in units of days and starts from the process of making an order carried out until the customer receives a training certificate. The time data from each process will be calculated and analyzed to determine the average time. This average time will be placed as the lead-time and process time in the value stream mapping that will be made.

IV. RESULT AND DISCUSSION

In identifying current conditions from the implementation of in-house training, it was first carried out by mapping the flow of the in-house training process described as follows:

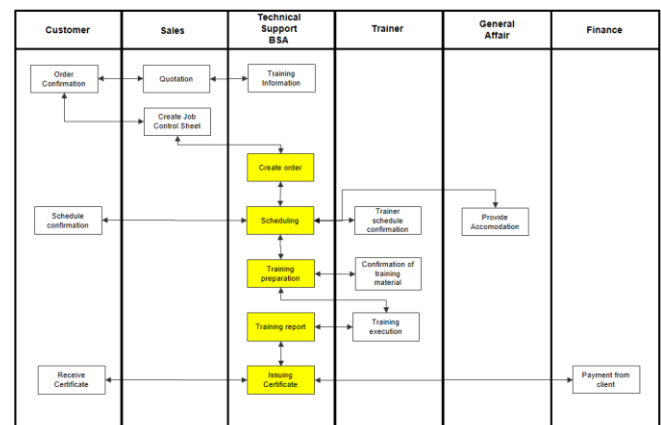


Fig 2. The flow of the in-house training process. Source: PT. TUV Rheinland Indonesia Business stream Academy and Life Care

The process of organizing in-house training in general as illustrated in Figure 2 Flow of the in-house training process at PT. TUV Rheinland Indonesia Business, which starts from the receipt of job control sheets from the sales to make an order, training preparation begins with making a training schedule that coordinates with the customers and trainers. The next process is the preparation of training materials that will be printed by the printing party and accommodation and transportation which will coordinate with the general affair

and trainers. After all the preparations are complete, the trainer is ready to be executed. From the results of the training, the trainers collected the data that will be provided to administrative parties (TS-technical support) in the form of attendees list, training participants' scores and training report. All data entered is checked and confirmed its completeness, then the technical support team prepares a draft certificate that will be sent to the customer to confirm the names of the participants. After the certainty of the names of participants, the certificate is printed and signed by the management and the certificate is ready to be sent. The requirements for sending certificates are after the customer has made full payment for his training services.

Table II. Value added (VA), non-value added (NVA) and necessary non value added activities (NNVA) identification on training process

Process	Total sub process	Total VA	Total NVA	Total NNVA
Create order	4	2	1	1
scheduling	7	3	1	3
Training preparation	7	5	1	1
Training report	2		1	1
Issuance of certificate	14	5	4	5
Total	34	15	8	11

Source: data processed 2018

The time data is divided into 2 main elements, namely from the start of the order made to the time of training execution (lead time order to training) and from the completion of the training until the certificate is sent to the customer (lead time training to certificate sent) The following is below The process of organizing in-house training in January - October 2018 is based on research observations. It is seen that the average lead time in the in-house training process is 104 days or 3.5 months with a minimum lead time of 42 days and a maximum of 224 days.

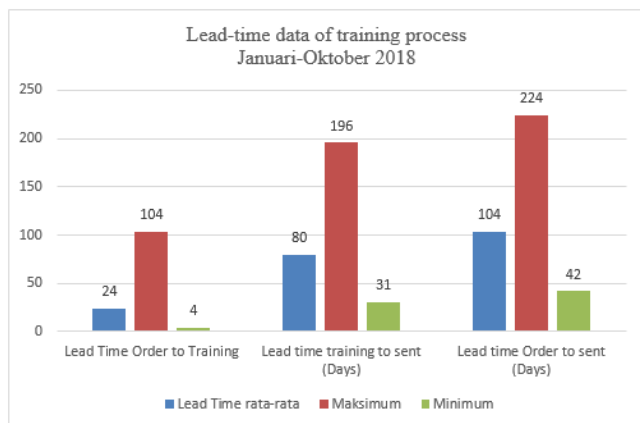


Fig 3. Lead-time data January-October 2018. Source: data processed 2018

Current Stream Mapping

Current Stream Mapping is an illustration of the initial process that takes place in a process of organizing in-house training that includes the flow of information and material. Current Stream Mapping is needed as a first step in the process of identifying waste by classifying valuable processes. In figure 3. There is an overview of Current Stream Mapping from the in-house training process.

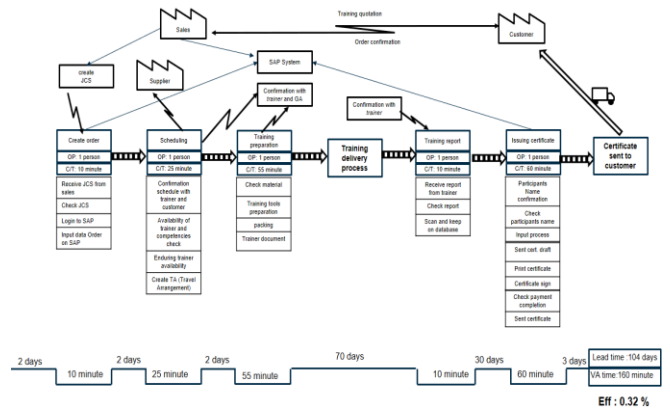


Fig 4. Current state mapping of training process. Source: data processed 2018

George (2003), if the Process Cycle Efficiency (PCE) value is less than 10 percent, this indicates that the in-house training process has much non-value add or waste activities. By changing one day to the minute: 1 working day = 8 hours = 480 minutes

Then:

$$\text{Process Cycle Efficiency} = \frac{\text{Value-add Time}}{\text{Total Lead time}} \times 100\% = \frac{160}{104 (480)} \times 100\% = 0.32\%$$

Thus, the process has many non-values added activities or waste.

Identify Waste Current State In-house training process

Andrés-López et al. (2015) state that there are eight types of waste in the service sector. From the results of observation and identification based on eight types of waste in the BSA work environment, the results are:

Table III. Waste of training process identification

No	Waste Type	Observation and Interviews Results
1	Overproducti on	Workloads are too dense if training requests occur together
2	Delay waiting	Waiting time to receive information such as from customers for certainty about the schedule and names of trainees, as well as payments from customers and confirmation of the trainer's schedule approval.
3	Unneeded Transport or Movement	The process of preparing and printing training teaching materials, document placement (hardcopy / softcopy) that is not effective
4	Over-Quality,	Preparation of draft certificates

5	<i>Duplication</i>	to check the names of trainees
6	<i>Excessive Variation, Lack of Standardization</i>	Search for training materials that are suitable with customers, not yet effective training standardization.
7	<i>Failure Demand, Lack of Customer's Focus</i>	Some processes do not yet have a standard
8	<i>Underutilized resources</i>	Repeated confirmation of the names of participants with customers that are not effective
8	<i>Manager's Resistance to Change</i>	Limited authority, unmotivated staff, staff need to increase expertise.

Source: data processed 2018

Before generating problem solving, a search for the root of the problems in the study was carried out supported by observations and discussion processes by several related parties. The following is the result of analysis of the fishbone diagram and root cause analysis in the process of conducting in-house training.

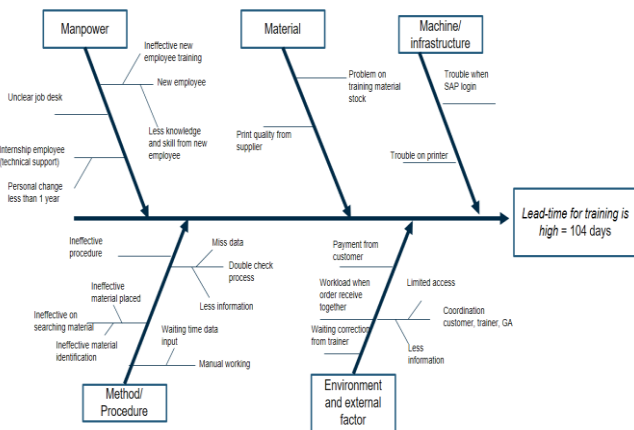


Fig 5. Fishbone diagram for training process. Source: data processed 2018
Future State Mapping

In improving the ongoing training process, system improvements are carried out using the Lean Service methodology. Lean Service is the right method used in service companies because they make improvements that are done in stages (continual improvement). This is in accordance with the concept of improving processes that make improvements by simplifying and streamlining processes in a sustainable manner.

The design analysis of the in-house training process is carried out by comparing the process of conducting in-house training that is currently underway with the process of organizing in-house training proposals made.

Kaizen Blitz

After knowing what is the dominant factor that causes the length of time the in-house training process. Then made kaizen blitz so that the design improvements through Future State Mapping can be carried out, the use of the Kaizen Blitz

method is expected to be able to focus on what must be improved so that it is expected to reduce the length of the production process. Thus, the efficiency and productivity that want to be achieved can be realized. Thus, that must be blitz on Current State Mapping according to fishbone analysis are in the service process area. The proposed simplification or downsizing process is as follows:

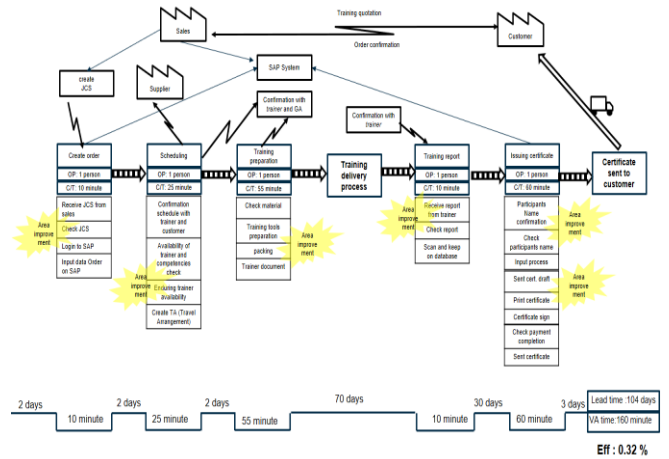


Fig 6. Kaizen blitz for training process. Source: data processed 2018
So that the model for future state is obtained as follows:

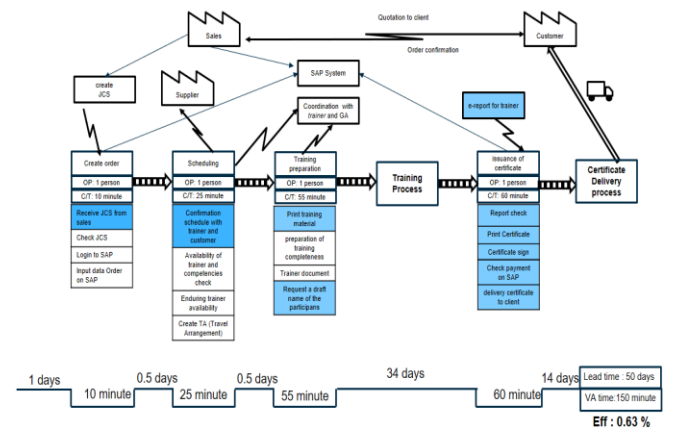


Fig 7. Future state mapping. Source: data processed 2018
Review new Process

After several improvements were made in the training process, there was an improvement in the lead time in the last 1 month, namely in December 2018.

There are improvements that have been made, namely

1. Using software for training evaluation
2. Establishing training procedures
3. Improve on coordination with GA, Customers and Trainers

Table IV. Lead-time after improvement

Lead time	Before improvement (days)	After Improvement (days)
Lead time order to training	24	18
Lead time training to certificate sent	80	33
Total Lead time	104	51

Source: data processed 2018

From the table above it can be seen with the implementation of lean service that there is a change in lead-time from 104 days to 51 days or around 51% from before the lean process was carried out.

V. CONCLUSION

Based on the results of research on the process of training services with the application of lean service - value stream mapping can easily identify the presence of waste and the types of waste in the process. This makes it easy to make improvements in the process. From the results of the research seen after the design of future state mapping there is a significant improvement from the lead-time process of around 51%. This certainly makes the process of training services more effective and efficient and is expected to provide positive added value for customers. To support the improvement of science and improve this research, it is recommended that further researchers conduct research with other methods such as six sigma, kaizen, 5S which have an effect on improving process performance, process time and productivity to get better conclusions. And also the implementation of lean service with the implementation of industry 4.0 in the service field.

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