VSM application in structure optimisation: a case study

Ana Santiago Gimenez-Breton
Dr. Javier Borda Elejebarrieta

Value stream mapping is a lean technique for both manufacturing and management process optimisation, identifying points of value and overhead costs added and improving processes over KPI's. The paper presents the real case of a company involved in manufacturing of ICT a equipment that has decided to become lean as a consequence of big pressures from a decreasing market size and enormous competence.

Significative structure optimisation and increasing the quality and agility of the outputs of management processes has been the leading motivation of the company, the challenge being to involve key people from operations in a task that will reduce personnel at the same time that increases their job contents and responsibility. In this context, the VSM as a clear, objective and participative tool has demonstrate to be very effective for sizing the new reduced overhead, and do it with the minimum traumas. In addition continuous improvement begins from this starting point.

1. Introduction

The company is one more SME of the ICT industry that has been beaten by the choppy economical situation. The company is involved in RDI, manufacture and sale consumer electronics for the digital TV market. Very influenced in the past by the MRP more orthodox model, the company built up a very high departmentalized and ineffective structure in the areas of logistics (sales, production, purchasing and procurement programming), production engineering and quality. This has been accelerated by the implementation of a new ERP in a very classical way.

The agility of production and support management processes and the reduction of personnel were assumed as imperative, the challenges being to do the changes with the minimum traumas and moral losses in the people that will remain in the future. Top management all agreed to give protagonism to this remaining people, and empower them with the use of appropriated tools in order to help them in simplifying processes, arising at the same time non added value steps and unnecessary resources.

The processes that have been "leaned" are: Sales planning and forecast, PPC and scheduling, Purchasing planning and control, Procurement planning and control, Manufacturing engineering, Quality and Manufacturing of PCB's components insertion and assembly of the final product.

Three main changes were the following:

- Integrating a logistics function with a lean process for planning and scheduling sales, production and procurement.
- Integrating quality and manufacturing engineering, and part of quality people in production.
- Develop a continuous improvement organization at the same time, along with extended manufacturing cells.

2. The VSM application in the company

VSM is a method that provides the necessary structure to ensure that the lean implementation team works effectively.

- It provides clear communications between management and rest of the company
- It incorporates management review
- Allows everyone to understand and improve their lean understanding
- Involves all company
- Is a visual tool that generates an actual lean design an implementation plan

It is based on the following points:

1. Commit to Lean
2. Choose the Value Stream
3. Map the current stage
4. Establish Metrics
5. Map the future Stage
6. Plan improvements
7. Implement.

The way we used this powerful tool was as follows:

First Step: Commit to lean: Identify the Value Stream Manager an Core Implementation Team members

Top management's first task was to select a value stream champion who was the expression of management's commitment. In our case the Managing director of the company was chosen to play this role. This person selected core implementation team members and introduced them into the Value Stream Management process.

Once the team was built we hold the kick off meeting in which we met all people that was going to be involved in the project.

Second Step: Choose the Value Stream

Kick off meeting

In order to communicate our plans to everyone involved in the project we hold a meeting in which the managers transmitted the following: The need for applying VSM in the company and reasons for choosing the areas that we were going to study, How the project would support corporate strategy and goals, Expected duration of the project and communications, Resource allocations to accomplish the objectives.

Third Step: Map the current State Accurately

During this step we drew a snapshot of conditions at the specific point in time we were: process communications, documentation and people's work standards.Only by grasping the present conditions can you create a future condition and plan how to implement it.

During this phase we found that there were two kind of maps of the processes:

- The way people said that did things (what ISO procedures said, what departments bosses and managers thought they do)

- The way they really do.

The way we did this was by interviewing people and drawing with them the process. We joined together people with similar activities to do this task. For each process we first identified Suppliers, Inputs, Process, Out puts, Customers. After that we drew the detail map of each sub-process

The company had their planning system based on an MPR system with forecasts not very accurate. This fact made that after sending the purchasing orders on week one they have to review them during week 2. Four days were spent in confirming orders that were going to be modified the following week. We can see that lead time for purchasing processes was two weeks, after eliminating some tasks (blue part) we could reduce the process from 15 to 9 days.

Once we had the maps we put together all of them and joined all people involved in the whole process in order to analyse with them the weak points of each process.

Fig 1: The Company we studied, had a final control process, which was done by statistical sampling in some products and unitary control in others. They spent about 9 days doing this task.

Fourth Step: Establish Metrics

The best way to get people to contribute to a lean initiative is to give them a simple way of understanding the impact of their efforts. Metrics provided us a very powerful tool to help to drive improvements and waste elimination. All companies use metrics, the key point is to identify the metrics we need in order to represent what we want to measure. Metrics must be few, easy to calculate and easy to understand.

Fifth Step Map future Stage: Identify improvement opportunities

After we had the picture of the current stage, and determined how we were going to measure, the next step was to tap the creativity of the core implementation team, to design the future stage. We discussed the different weak points of current processes, and finally we agreed in which areas we were going to put our efforts. At that point we were ready to start making our future stage map. The final plan to implement was agreed by all people involved in the process. Coming back to our examples:

When we integrated the quality process into production we reduced lead time from 7 to 2 days. We eliminated final control by modifying the Quality Sheets definition process, in a way which permitted us ensure that products were going to get to warehouses with the quality level required.

In order to improve the planning system, we join in the same person, sales and manufacturing planning. This fact helped us to improve the accurateness of MPS. In the purchasing example we eliminated some operations that did not add value to the process: such us order confirmations.

As a result of the project we came to a personnel reduction of 16 people with the minimum traumas.

SIPOC (Suppliers Inputs Processes Outputs Customers)

Process	Quality Control			
Suppliers	Inputs	Process	Outputs	Customers
Final production Process/ Packaging	•Production report	•QC Checks •Unitary Control	•Production report (paper) •PC reports	•Warehouse •Sales department •Final customer •Quality guaranty department
	•Packed products – Wide bands centrals – A station – SZ5 Modules – Digital TVI •Reprocessed products		•Accepted Products •Rejected Products	
Process stages				

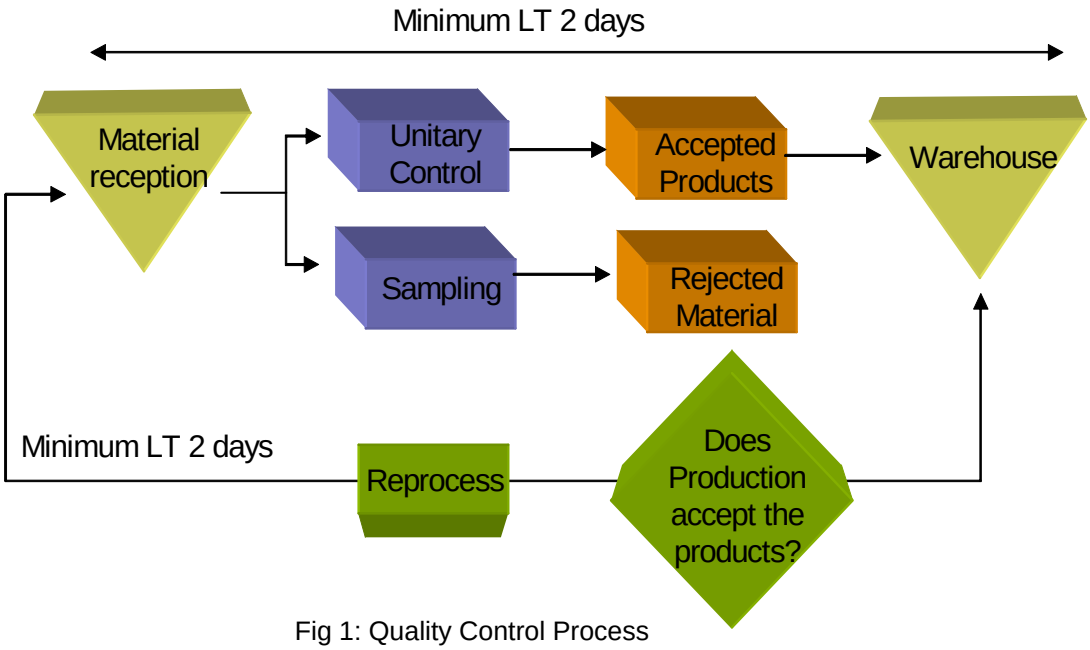

Fig 1: Quality Control Process

4. Conclusions and lessons learned

Changes are not easy, but the more people knows what is going on, the easier is to deal with the anxieties that accompany significant change. We would strongly recommend the following:

Communicate to all your Value Stream the project. Make sure that everyone upstream and downstream involved in the project knows what it is happening and why. Rumours and misunderstandings may damage your project.

Identify negative behaviour early in the implementation If someone does not seem to be participating or displays negative behaviour, talk to that person privately, listen to people concerns and work to resolve them. Explain how the improvement effort will make the company stronger, and how will make everyone's work easier. Major changes to the value stream combined with small improvements help create a fast, flexible and customer driven process with little waste.

Recognize People's Efforts Practise mutual trust and respect and treat people with integrity everyday

Do not let a problem stop an improvement process It is impossible to prevent all de the details, during the implementation you will find some little details that you underestimated during your study or that were unforeseen. Acknowledge the problems and reschedule the events you had planned. Be patient and realistic During the project you will find other areas to improve, you can not transform everything at one time. Keep on with your plan.

5. References

TAPPING, Don; LUYSTER, Tom and SHUKER, Tom

Value Stream Management

Productivity Press, 2002

BORDA, Javier; SANTIAGO, Ana

Lean Six Sigma Sinergy

BEE, Deusto University, 2003