

LEAN MANUFACTURING

Background

The Private Sector Development Cluster Project (PSDCP) is being implemented by the Ministry of National Economy (MoNE) and the Federation of Palestinian Chambers of Commerce, Industry and Agriculture (FPCCIA). The overall objective of the PSDCP project is to strengthen the competitiveness of local companies, especially MSMEs, in order to increase their market share of the domestic market and or explore new markets for export. A cluster approach is being used to achieve these overall objectives and it is anticipated that there will be a variety of support for the chosen clusters that have growth potential. The MoNE will capitalize on the cluster approach and create an improvement in public/private dialogue that will inform on industrial policy.

In the context of the cluster requirements the Operational Unit (OU) of the PSDCP have agreed with the Cluster Action Teams (CATs) that one of the best options to achieve the cluster strategic objectives would be to implement a Lean Manufacturing program, using an international expert, assisted by a national expert. The Lean aimed to improve the processes of operations and productivity for the clusters; by utilizing industrial engineering principles, lean manufacturing approaches, 5S (sort, set in order, shine, standardize, sustain), and other applicable concepts of good manufacturing practices.

The idea started with assessment for the cluster needs in order to build the appropriate schedule. However, the training was not easily accepted by the companies, because it was a long training and needed commitment from the companies. When the idea was proposed, five companies were fully committed and interested to invest their time in participating in such a training, thus enhancing their productivity. An expert from UK was responsible for building the companies' capacity through: cost reduction, waste reduction and quality enhancement. He conducted a two-day orientation session about the Lean program with a detailed discussion regarding its goals.

The core component was to tackle cost reduction through waste reduction, thus building the employee' capacity and enhancing the operational units which therefore reduces the waste for the raw material. Moreover, the lean program focused on improving production capacity; for instance, in Al-Waleed Company it improved by reducing the number of machine workers, therefore investing in time and raising the workers' efficiency.



Two Employees from Al Waleed Company implementing one of the lean tactics

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The problem

The Palestinian factories are facing a serious problem in labor productivity, high wastage and re-work according to Lean pre-assessment. The management process and operations effectiveness are considered to be two of the greatest problems. Therefore, major issues emerged leading to high wastage such as sorting – disposing unused materials, high damage, high electricity use, large number of inventories, lack of employees tracking system and the smoking issue. The local management and factory owners have not developed good quality or process procedures, generally due to an unawareness and lack of management capacity leaving waste facilities for the last decade. Several methods have been proposed in order to combat this. Perhaps the most effective of these is the lean program; that existed to be a systemizing tool, efficient to build the firms' capacity in order to manage the waste reduction.



Misuse of wastage before the Lean program



Identifying reuse of wastage

“Before the lean we were at an undeveloped stage where we suffer from low productivity and poor cost competitiveness. The training worked on major areas of improvement, amongst many identified, are those of productivity, quality, worker skills upgrading, the application of industrial engineering principles, certification and standardization, technology up-grading, efficient use of energy, improvement in inventories etc.”

Khaled Mahboba

Lean Stages:

- Setup phase: Preparation of lean assessment tools
- Lean assessment in factory and data gathering
- Lean assessment report and lean planning
- Implementation process
- Lean reassessment in factory and showing results
- Corrective and follow-up



One of the lean sessions in Hebron, presenting outcome and future plans

Lean Stages

As a way to raise the cluster members' value in a short period of time with a minimum level of interference in the normal production process, a five-stage lean approach was conducted with the assistance of a lean expert in order to lead to lower the process of labor productivity with a high wastage. The stages started with a setup phase: Preparation of lean assessment tools which included production station assessment, cost assessment, risk assessment, labor assessment and marketing assessment. The First phase focused on Lean assessment in factory and data collection, capacity building, time management and step counter. This has led to conduct the Second Phase which included a lean assessment report, lean planning, determining priorities, suggesting solutions, creating a time frame, building a feasibility study, identifying the expected outcomes and required resources, as well as laying out an information system. The Third Phase consisted of implementation: this phase started with discussing problems with the top manager and the lean team followed by Implementing solutions according to the lean plan. The Fourth Phase focused on lean reassessment in factory and showing results leading to the Fifth and final phase which is mainly about setting corrective actions to main problems as well as following up on the results.

Challenges

There have been several challenges that faced the lean manufacturing in the initiation phase which are as follows: changing the mindset to collect data for measuring the waste as it is perceived to be a waste of time. Moreover, there are critical issues such as the safety culture of the factories, as well as the poor workforce attitude towards implementing the enhancement of the dust extraction and smoking issues. In the implementation phase, the factories' management lacked consistent attention to detail and systematic approach. The commitment of the factories towards the duration of lean program and the trust issues they had with the international expert were two of the main obstacles.

"It was a remarkable success for the factories that participated in the lean program. It inspired them to discover their weaknesses in different areas, and work towards improving and developing.

Despite the challenges the factories faced at the beginning of the training, they were deeply encouraged by the results the lean program has achieved.

'In every mistake, there is a potential for growth.'

Abed Al-Rahman

Outcomes

The Lean Management training was one of the most positively effective training activities, which assisted companies in reducing costs and improving production lines and processes. All the factories had major cost reduction through systemizing the waste reduction process, the three clusters that participated recorded **2.2m** cost reduction as an impact of the lean program. The factories had major improvements on sorting by using warehouse separation of finished product & raw materials to avoid the damage, and the re-use of lost and damaged materials. They developed a new employees tracking system to control the efficiency and productivity of workers as well as sustain the production line. As for wasting resources, the factories succeeded to reduce the usage of electrical lighting by encouraging the natural light. For more safety in transportation the factories used mobile cages to avoid the possibility of causing damage to the products and utilizing time management techniques helped raising the efficiency of transportation. Moreover, the clusters are more accurate in applying the designs by decreasing the percentage of mistakes and customer complaints, through improving the quality of work and relationships with customers.

