Survey-based statistical data and totaling long columns of numbers on Lean Manufacturing; Case Study

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Abstract

This questionnaire is part of my DEMS research, is to be distributed to selected Libyan Textile companies, aiming to evaluate their quality practices and see whether they have the right capabilities to implement lean manufacturing. This questionnaire is developed based on an extensive literature review focusing on the technical and cultural requirements of lean, lean critical success factors (CSFs), and elements associated with types of wastes which lean works to eradicate. Furthermore, this questionnaire targets the whole chain of lean, from suppliers, through internal processes/practices, and finally to customers. This should enable us to understand how Libyan companies operate in terms of supplier and customer relations, process flows, the use of scientific tools to deal with problems, top management commitment and leadership, and finally respecting people via involvement, empowerment, reward systems, and training. The questionnaire is divided into six constructs (47 statements): The contents of the questionnaire were selected in order to assess the companies' practices so that the preparedness and readiness level towards the adaptation of lean could be identified.

Keywords
Lean Manufacturing, Lean, Waste, Textile, Survey Methodology, lean implementation

1. Method and Equipment

Applies	Best Performs	Incidence of Agreement				
		Strongly Disagree	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***
5S	The workshop is divided into different workplaces and each zone has a specific task	❑	❑	❑	❑	❑
Cellular Manufacturing	The processes used within similar operations are placed close to each other in order to eliminate unnecessary steps	❑	❑	❑	❑	❑
Skilled People	Each working zone is controlled and operated by qualified and well-trained workers	❑	❑	❑	❑	❑

5S	Each item/piece of equipment is labelled to ensure it is located in the right zone/location in the workplace	❑	❑	❑	❑	❑
Pull	Production at each station is pulled by demand from the next station	❑	❑	❑	❑	❑
5S and Standardization	A certain person is assigned as a part of his daily activities to ensure that the workplace is clean and all tools/pieces of equipment are put back in their appropriate places	❑	❑	❑	❑	❑
TPM	Equipment maintenance records are posted on the shop floor to be actively shared with employees	❑	❑	❑	❑	❑
Cellular Manufacturing	The process flow of material and components is smooth and continuous, as the equipment is grouped	❑	❑	❑	❑	❑
Pull	Products are not produced unless orders for them are received from customers	❑	❑	❑	❑	❑
TMP	Machine operators and staff are engaged in the scheduled maintenance of equipment so that machines are maintained on a regular basis by skilled people	❑	❑	❑	❑	❑
Documentation	There is a well-documented configuration setting for each machine/piece of equipment to avoid uncertainty about how to reconfigure the equipment during changeover	❑	❑	❑	❑	❑
Standardization	The total cycle time is revised for each product on a regular basis in order to reach the optimum level	❑	❑	❑	❑	❑

2. Progress and Controller

Applies	**Best Performs**	**Incidence of Agreement**				
		Strongly Disagree	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***
Problem Solving	In order to improve production, a focus group of workers is conducted (on a regular basis) to help the company identify wastes and solve problems by generating new ideas and solutions, which are then submitted to the managers	❑	❑	❑	❑	❑
Benchmarking	There is an awareness of the wider industry performance and a clear strategy is followed to benchmark performance with the top-class firm (at a domestic and national level)	❑	❑	❑	❑	❑

Standardization	There are standard routes for loading raw materials and removing end products, including a standard picking time	❑	❑	❑	❑	❑
Problem Solving	Problem-solving techniques such as Fishbone diagrams are used to identify the causes of quality problems	❑	❑	❑	❑	❑
KPI	Up-to-date charts showing defect rates, key performance indicators, progress and next job activity are displayed on the shop floor	❑	❑	❑	❑	❑

3. Clients

Applies	**Best Performs**	**Incidence of Agreement**				
		Strongly Disagree	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***
Customer awareness	There is an awareness of what product features customers value and are willing to pay for	❑	❑	❑	❑	❑
Customer feedback	Feedback is sought regularly, and surveys/meetings are often held with customers to improve product design and quality, and service	❑	❑	❑	❑	❑
Customer involvement	Customers participate in the initial design process	❑	❑	❑	❑	❑
Customer relationship	Valued customers are brought into visit the plant in order to give them some ideas about quality control that the company can follow	❑	❑	❑	❑	❑
Customer involvement	Customers help the company by providing information about their future demands	❑	❑	❑	❑	❑
Customer involvement	There is a system in place for collecting customer complaints so that problems can be avoided in the future	❑	❑	❑	❑	❑

4. Contractors

Applies	**Best Performs**	**Incidence of Agreement**				
		Strongly Disagree	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***
Quality suppliers	A clear strategy is in place by which to evaluate supplier performance in terms of quality, delivery and prices	❑	❑	❑	❑	❑
Close suppliers	Local suppliers are used to avoid shipment delays	❑	❑	❑	❑	❑

Supplier involvement	Suppliers are aware of product designs and participate heavily during design and development	❑	❑	❑	❑	❑
Quality suppliers	Raw materials and purchased parts are not subject to incoming inspection as they come from qualified suppliers	❑	❑	❑	❑	❑
No. of suppliers	Active steps are taken to reduce the number of suppliers in each category	❑	❑	❑	❑	❑
Quality suppliers	Raw materials are received on time from the date of order	❑	❑	❑	❑	❑
Supplier relation	Suppliers are cooperative and committed to maintaining a long-term relationship	❑	❑	❑	❑	❑
Feedback to suppliers	Suppliers are provided with feedback regarding quality and delivery performance	❑	❑	❑	❑	❑

5. Human Resources

Applies	**Best Performs**	**Incidence of Agreement**				
		Strongly Disagree	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***
Involvement	Workspace layout is reconfigured regularly based on feedback from employees	❑	❑	❑	❑	❑
Multi-tasking	Workers are able to perform different tasks	❑	❑	❑	❑	❑
Contribution	Shop-floor workers effort submission list	❑	❑	❑	❑	❑
Motivation	Numerous awards, incentive programmers and annual bonuses are available for employees who help to improve processes and eliminate unnecessary steps. The evaluation is based on group performance	❑	❑	❑	❑	❑
Skilled people	Workers are qualified enough to contribute to solving problems, and are able to work as a team	❑	❑	❑	❑	❑
Communication	Departmental and employee relations are good, and conflict barely occurs	❑	❑	❑	❑	❑
Involvement	Each employee has a clear understanding of his job description	❑	❑	❑	❑	❑
Training	Employees have undergone quality training in terms of developing their problem-solving capabilities and identifying non-value-adding activities	❑	❑	❑	❑	❑
Empowerment	Workers are empowered to stop the production line if abnormalities occur	❑	❑	❑	❑	❑

Participation	Suggestions and ideas from shop-floor employees are actively used and implemented	❑	❑	❑	❑	❑
Teamwork	Employees act according to the interests of the group, rather than their individual interests	❑	❑	❑	❑	❑

6. Top Organization and Leadership

Applies	Best Performs	Incidence of Agreement				
		Strongly Disagree	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***
Visible Management	Top management encourages and coaches workers by visiting the workplace on a regular basis	❑	❑	❑	❑	❑
Knowing people's capabilities	We locate our worker where they can use their skills, qualifications and experience	❑	❑	❑	❑	❑
Job security	People have job security and workers are regularly promoted to managerial positions	❑	❑	❑	❑	❑
Commitment to improvement	Company invests in training programmes and encourages cross-job training	❑	❑	❑	❑	❑
Commitment to improvement	Company uses external experts/consultants on a regular basis to evaluate the overall company performance and to improve production and quality level	❑	❑	❑	❑	❑

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Biography

Dr. Ahmad Yame earned his Bachelor degree in Engineering Technology from the Lawrence Technological University in 2010, Mr. Yame has three master degree, the latest was in 2015 in Industrial Engineering from Lawrence Technological University, second MSc was in Engineering Management 2011 from the Lawrence Technological University and his first MSc was in Mechanical Engineering back in 2007 from the National University of Malaysia. He earned his Associate's degree in Mechanical Engineering 2004 from the Libyan Higher Professional Center for Comprehensive Professions. He primarily develops engineers but also has experience with software and testing. Dr.Yame has tested many enterprise applications for automotive MAHLE Laboratories in 2013, he working with Panasonic automotive in North America since 2016 to test vehicles for AHU/Sync and diagnostic functionalities of engine control systems. He has organized several simulations, in order to test the engine control software and the diagnostic functionality on a CANlog, respectively, through non-regression and diagnostic tests.