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Research paper

Lean management implementation difficulties, studies and recommendations

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Abstract

Speeding up FAST FASHION development cycles for the apparel industry, always bringing more values to the customer, seeking performance through continuous improvement. This paper presents a deployment approach to Lean Management, helping to make it more concrete, efficient, less theoretical. The realization of the approach was based on case studies, state of art and references made in Moroccan companies in the textile and clothing sector. This analysis sheds light on the importance of aligning the lean management strategy with the company's strategy and values, hence the use of the socio-technical approach. The objective of this study is to realize a brief application of Lean Management, able to transform it from a theoretical organization to a practical one. This Lean Deployment Study is considered unique in that it addresses the need to work on psychology, culture, societal values of each company, to prepare for and align it with Lean management strategy, before attacking its practices. This article is a first development of strategies and methodologies proposed for improvements that seek to focus on the overall performance of the company.

Keywords: *Implementation; Lean Management; Lean Tools; Manufacturing Program; Results-Oriented Measures; Socio-Technical.*

1. Introduction

Lean manufacturing is primarily focused on designing lean, reactive, flexible, predictable and consistent lean production operations. Some elements, such as: workflow, organization, process control, and logistics represent the different elements needed to support an optimized and lightened manufacturing program. It is a process of continuous improvement that can only be achieved through a motivated and trained staff, driven by performance, results-oriented measures and aligned with customer demand criteria. While Lean has been successful in Japan, many managers around the world are struggling to apply the method in their businesses. It remains in most cases theoretical. Is it possible to implement Lean management in other countries of the world? What is the socio-technical parameters involved? How can we achieve a good application of this organization?

2. The background of the lean approach

Nowadays Lean Management has become a trend in Moroccan companies. All managers that are wishing to adopt Lean approach are facing the following issues: Should we implement the Lean approach sequentially or simultaneously? By what practice should we start implementing Lean? So far, no consensus around a method of implementing Lean has been established. Differences in Lean maturity levels may be consequence of lack of lean implementation standards.

2.1. What is lean management?

Lean Management is a work method that aims to improve the performance of an organization by eliminating all forms of waste. If the method is being formalized, the success rules must be developed according to an "inductive" or reasonable process. So, what is the inductive reasoning of Lean Management?
Lean Thinking lays out the three Lean manufacturing principles:

- Value
- Flow
- Perfection

2.2. Questioning the lean approach

Lean management is an approach with a foundation and a basic philosophy that is often forgotten by industrials.

We don't learn how to become LEAN by reading books or by following an initiation training that introduces the philosophy or the tools of LEAN, it's due to a concrete practical implementation that in which we learn what works best in several situations.
The implementation of lean manufacturing can't be sustained in an old culture that doesn't have a new operating environment
Before implementing a Lean manufacturing project, we must make sure to answer the following questions in order to make a link between theory and practice:

- Why are we changing?
- What are we changing?
- Where are we now?

Throughout the implementation of the Lean method, many managers spend time thinking how to boost the OEE and focus on a single goal while forgetting the human factor.

2.3. Moroccan companies' retrospective

This part provides a summary of the studies carried out in Lean production environments in the last 10 years in Morocco. It aims to identify the key points that can contribute to the success of Lean Management.
To investigate the existence of anteriority between different Lean practices, a questionnaire about Lean concepts was sent to Moroccan companies' managers that have implemented LEAN.

3. Companies various aspects

3.1. Socio-technical approach

It is very important to note that we can't consider that organizational model will succeed just because it has been proven that it doesn't fail elsewhere.
Carrying out a business diagnosis is necessary to analyze in several dimensions the company and contribute to its suitable model.
The socio-technical approach is an approach that considers the organization as an open system composed of technical and economic systems as well as a social system. It considers that the organization neither depends on the technology alone, nor the psychological and social situation of men at work, but it depends on both. Its performance is the result of an optimal combination of social and technical organization. According to the socio-technical approach, the efficiency of each company depends on the joint optimization of these two systems. If any of them functions inefficiently, the organization may experience problems and dysfunctions.
This approach allows us to review the business as two systems:

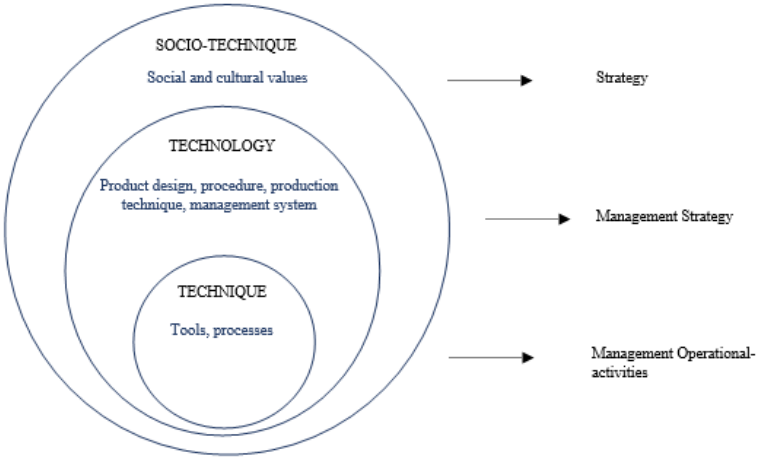

Fig. 1: Example of Socio-Technical Systems.

The technical subsystem limits the organization of work. The efficiency of the production system will then depend on the reaction of the social system towards the limiting conditions of the technological system. Hence the idea to diagnose and optimize according to a Lean standard adapted to the company because there are different possible answers but with various efficiencies.

3.2. When the lean and the socio-technical approach combine

3.2.1. Social dimension

Often, managers allocate a lot of time on Lean Management tools and methodologies while forgetting the behavioral responses of their staff. Managing a team and giving them the desire to participate in the success of Lean would require a diagnosis of its social and behavioral aspect. If the size of the company, its age, its organizational model and hierarchy make a socio-technical entity with predefined social and cultural values, how can we evoke a behavioral evolution of the staff to guarantee the success of our Lean program?
After conducting a comparative study of several Moroccan companies that were able to implement Lean as a management method, it turned out that Leadership, recognition, motivation and strategic alignment with the company culture are the characteristics that made it successful. Preparing a social climate before proceeding to the technical diagnosis of workshops, is the first phase of our Lean approach, this phase carried out in two sub-stages:

- Social diagnosis: assessing the social climate in a Lean context consists in evaluating the hierarchical relations, the behaviors of the staff in their daily work, the behavior of their representatives in the field and in their bodies of representation.

- Social action plan: change the hierarchical structure of the company, strengthen management for its social animation, involve and integrate people and renovate the governance of work are examples of actions that improve a company and can lead to a specific social model.

3.2.2. Strategic dimension

To diagnose the strategic approach, is a phase that requires in depth work to properly lead the Lean approach. As the strategy must meet the challenges of Lean philosophy, it must also be aligned with the social entity of the company.

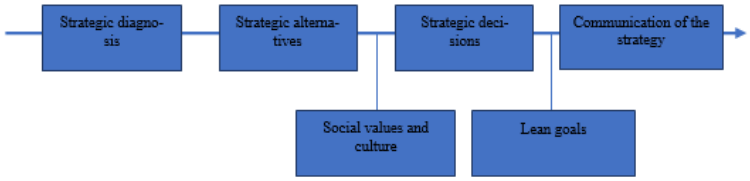

Fig. 2: Strategic Methodology Steps.

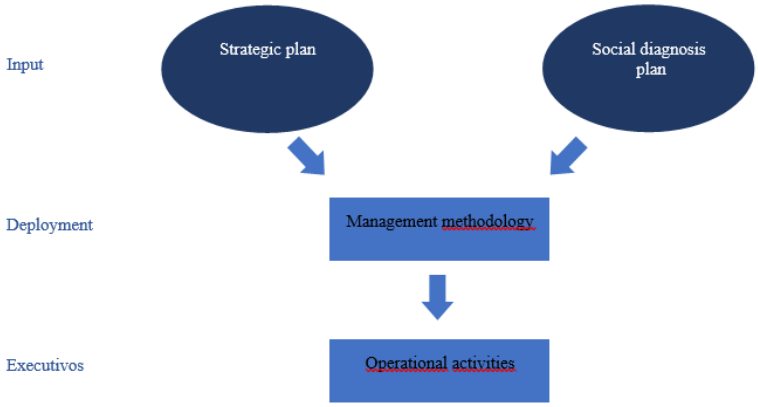

Fig. 3: Description of the Strategic Methodology.

3.2.3. Managerial and operational dimension

Avoiding determinism means that no organizational model can be imposed on businesses just because it will follow a Lean philosophy. The core of a given model must result from a logical choice that is linked to the company's strategy and its environmental factor.

a) Diagnosis of managerial activities

After ensuring a suitable social climate and a strategy that is aligned with it, it is now necessary to respond to strategic issues and establish a technical diagnosis and an appropriate action plan by analyzing:

- The entities of the company: number of managers, operators and positions etc.
- Flows, job descriptions, communication tools, etc.
- Organization: analysis of procedures, working methodology, management system, etc.

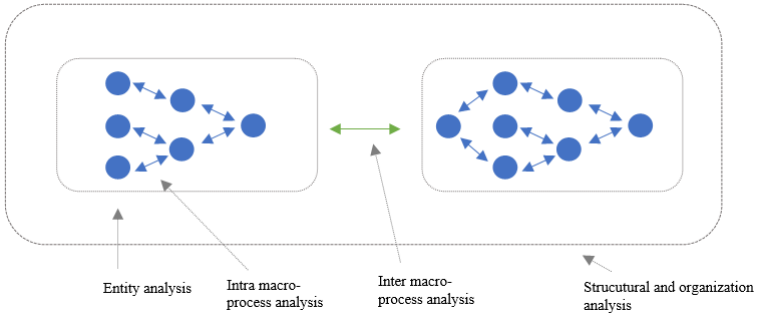

Fig. 4: Analytical Approach for the Managerial Activities.

Key performance indicators for Lean Management:

Table 1: Lean Management KPI's

Managers	IT workflow	Organization
Managerial skills Technical skills Operators Versatile rate Absenteeism rate Technical skills	Reliability of the data Flexibility of the data Formal flow management procedures. Physical flow	Presence of job description Presence of KPIs Acceptable number of managers

b) Operational activities diagnosis

Before applying our Lean deployment study, we choose to conduct a study in the Moroccan industrial firms that are currently deploying lean management.
Below is the result of the survey and the study done in the first industrial unit chosen and who agreed to share with us his experience in the deployment of Lean.

4. Case study

4.1. Example of a company deployment

In the first place, we chose to conduct a study in the Moroccan industrial firms that are currently deploying lean management.
Below is the result of the survey and the study done in the first industrial unit chosen which agreed to share with us its experience in the deployment of Lean.

4.4.1. Social dimension

This social diagnosis was done based on a survey using the KPI's below:

Table 2: Quality and Social Skills

Number	Quality and social skills	Number	Quality and social skills
1	Presentation – posture	14	Presentation – posture
2	Confidentiality- viability	15	Confidentiality- viability
3	Self-control – emotional management	16	Self-control – emotional management
4	availability- sense of service	17	availability - sense of service
5	Pro-activity– capacity	18	Pro-activity– capacity
6	Autonomy-responsibility	19	Autonomy-responsibility
7	Initiative- force of proposition	20	Initiative- force de proposition
8	Implication-dynamism	21	Implication-dynamism
9	Practicality- judgment capacity	22	Organization-manner-rigor
10	Organization-manner-rigor	23	IT-adaptability
11	IT-adaptability		
12	Empathy-friendliness -diplomacy	25	Empathy-friendliness -diplomacy
13	General culture		

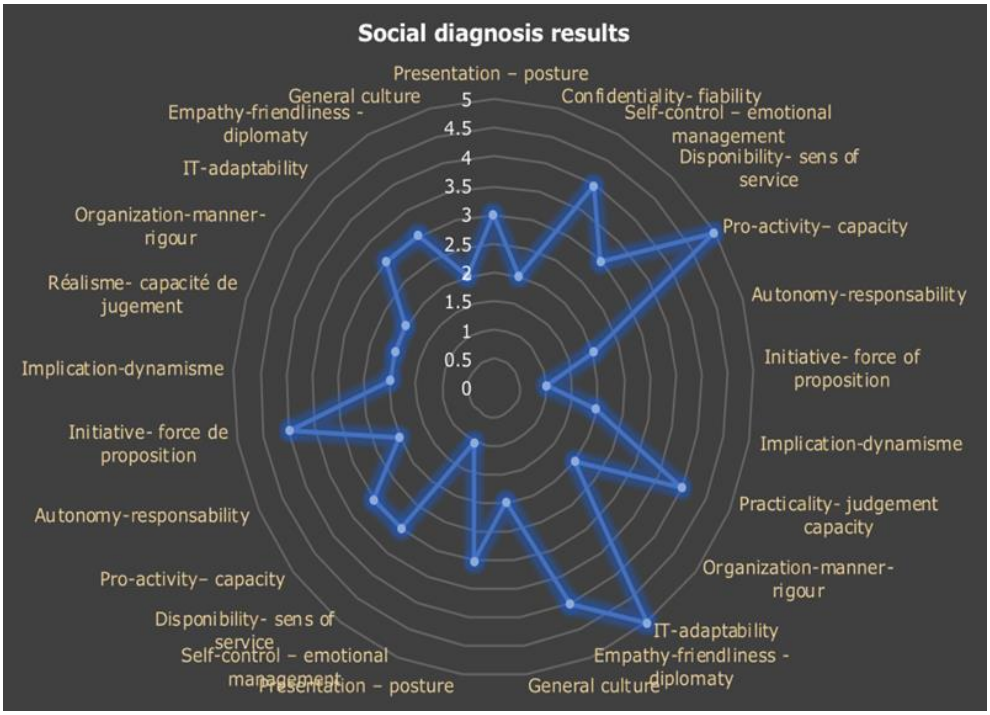

Fig. 5: Level of Social Skills and Qualities, Social Diagnosis of NEW WASH Company.

Preparation of a social environment suited for the Lean approach
In the case of this industrial enterprise, several actions regarding the social climate have been introduced.
The manager of the company confirmed that Lean is an effective approach to measure performance more effectively, also to define and adapt to activities and intangible assets. (example: impact of a training on the performance, skilled labor management ...)
The company was able to rethink its social climate, to change it and to prepare it for action improvements for an optimal application of the lean management because bringing the awareness and the assimilation of its basic funds by employees is crucial. Following this perspective, the company became more aware of the importance of recruiting young talents with high potential that will be channeled to a new state of mind for the whole of company. It has also created a creative space and a healthier environment, where they could create new development plans.
A technical diagnosis was carried out after preparing the social environment; this diagnosis was completed by an in-depth analysis via a survey helping us to go into the functioning details.
Result diagnosis example:

Table 3: Dysfunctions Identified in Supply Chain Process

Activities	Dysfunctions identified in the Supply Chain process
	STRATEGIC PROCESS
	No budgeting strategy
	Absence of strategic sourcing decision
	Lack of dashboards
	TACTICAL PROCESS
	No method of calculating needs
	Absence of security stock
Physical activities	Absence of purchase schedules
	Undefined distribution capacity
	No procedure for monitoring the inventory status
	TASK
	Lack of communication between the purchasing manager and the factory manager.
	Lack of commercial forecast
	Absence of distribution schedule
	Purchases launched late in urgency and without consolidation
	STRATEGIC PROCESS
	Absence of the Supply Chain KPI's on the IT systems
	TACTICAL PROCESS
IT activities	Absence of a business processes management
	OPERATIONNAL PROCESS
	Missing information
	Unreliable information

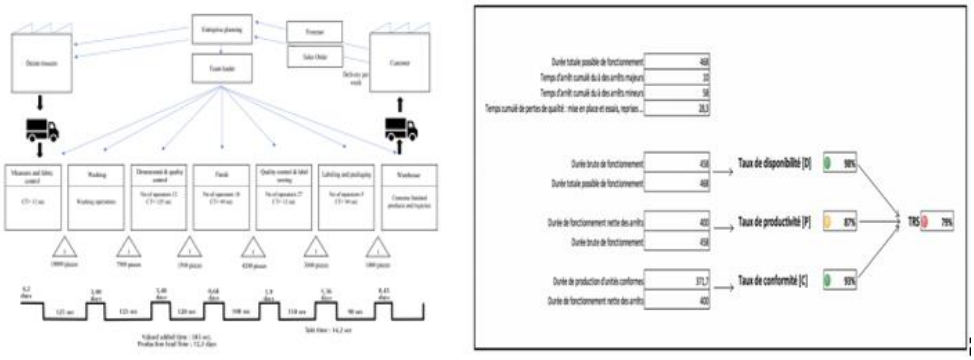

Fig. 6: Example of Value Stream Mapping and Production KPI's, NEW WASH Process.

Fig. 7: Example of 5S Audit Checklist, NEW WASH Diagnosis.

Action plan example

Strategy:

- Optimization of the customer service.
- Establishing more partnerships with suppliers.
- Investing in new eco-friendly technologies.

Management:

- Hiring new managers.
- Reformulation of each department's procedure.
- Implementation of a continuous improvement department.
- Implementation of a BPM (Business Process Management).

Operational activities:

- Realization of the methods sheets for each new model.
- Training of operators on new technologies
- Operators technical training
- Realization on new balancing for a better load of workstations

4.2. Tracking key actors of the Lean approach

The previous case of deployment allowed us to see an example of an approach but does not give us an idea of the link between each of the main elements to the deployment of lean and does not provide a map "how to" to implement a real continuous improvement in a different area or environment.
The contradiction of the data concerning the lean implementation approach led to question of the most appropriate order to implement for a successful Lean approach.
To get a more in-depth view on the subject, a study was launched, and 6 Moroccan business owners were interviewed, this study was intended to identify, on one hand, the essentials to the deployment of a Lean approach and on the other hand, the anterior flows between different practices
The first step of the method is to place practices that do not have anteriority and to remove them from the list of the table. After having erased them from the list, we notice that another practice no longer has anteriority, so it is automatically placed after those already selected in step 1 and subsequently erased. These steps are repeated until all practices are erased. If symmetry between two practices appears in this case, the two Lean practices must be erased and placed at the same time. Afterwards it is necessary to carry out several iterations of this procedure. Adapted to the case study, the method of anteriorities will allow us to identify the order of optimal implementation of Lean practices for the success of this approach.
According to the 6 companies surveyed, the involvement of management is the first rank observed in the implementation of this approach. Indeed, the commitment of the management is an anteriority essential to each practice.
The second rank identified relates to value-setting practices, staff engagement and diagnosis. These three practices therefore have only one anteriority: the commitment of the management.
The Lean practices that can be implemented next are those ranked third in terms of performance measurement practices, standards, VSM and the 5S tool.
The fourth rank includes eight practices for which between two and four preceding actions were identified.
The success of other Lean practices in Rank 4 will depend on the implementation of several practices in Rank 1, 2 and 3.
The last rank obtained concerns the implementation of flow practices. The successful implementation of these practices requires the highest level of Lean maturity since it depends on the success of many other Lean practices (several preceding actions identified).

Table 4: Lean Practices

1	Flow/ pull system / balancing
2	SMED
3	Continuous improvement / Kaizen
4	Performance measurement
5	Standards
6	Problem-solving
7	Maintenance
8	Value Stream Mapping (VSM)
9	Management commitment
10	Versatility
11	Visual management
12	Diagnosis
13	5S

Table 5: Level of Anteriority of Some Lean Practices

	To do														Level of anteriority
You must have done	1	2	3	4	5	6	7	8	9	10	11	12	13	14	0
	2		0	0	0	0	0	0	0	0	0	0	0	0	0
	3	4		0	0	0	0	0	0	0	0	0	0	0	1
	4	0	0		0	0	0	0	0	0	0	0	0	0	0
	5	4	5	4		0	0	3	0	0	0	0	5	0	5
	6	3	0	0	0		3	0	0	0	0	3	0	0	3
	7	0	0	0	0	0		0	0	0	0	0	0	0	0
	8	0	0	0	0	0	0		0	0	0	0	0	0	0
	9	5	0	0	0	0	0	0		0	0	0	0	0	1
	10	7	1	7	5	5	4	4	2		4	7	6	5	9
	11	5	5	5	4	5	4	0	0	0		6	0	0	7
	12	0	0	0	0	0	0	0	0	0	0		0	0	0
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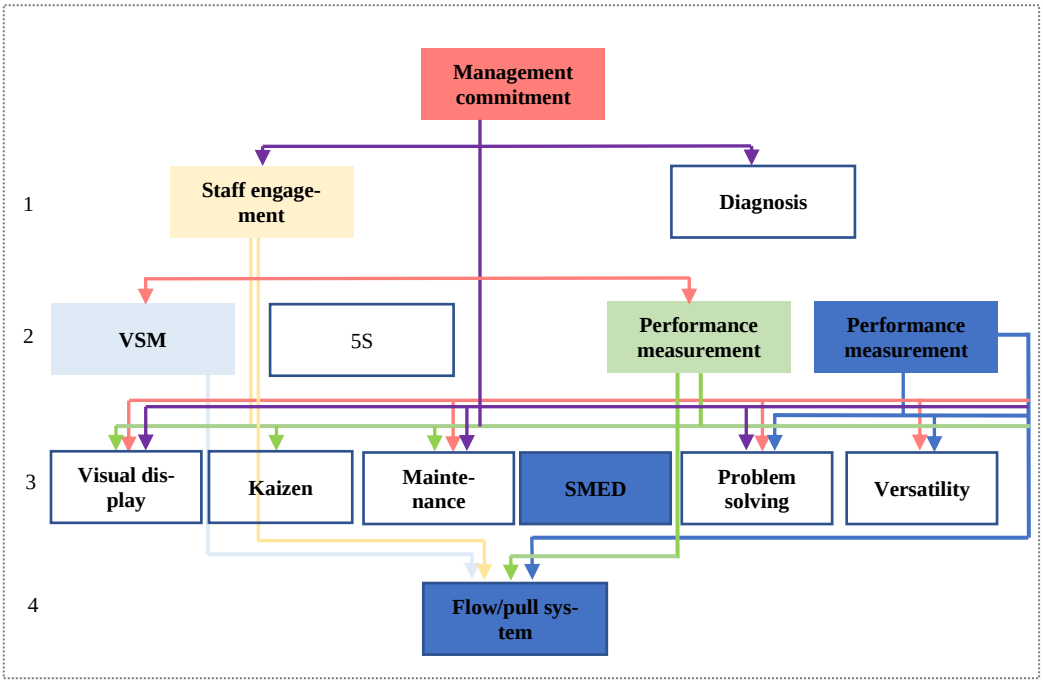

Fig. 8: Existing Links between Lean Practices.

5. Conclusion

To be competitive and keep pace with the modern world, the company's product must be responsive, flexible, predictable and coherent. Manufacturing operations must be continually improved, and the workforce continually trained based on performance criteria required by the client and based on results. By correctly deploying the Lean with its tools and by following the order recommended by its practitioners, I think that any company that wants to establish Lean management can be able to create an organization able to meet the expectations of world-class customers, today and tomorrow. Lean management as an organizational approach can be seen as a revolution in some companies. However, any revolution requires preparation and awareness for its implementation. Otherwise, it may suffer diversions that make its application difficult or even impossible. Supervising, coaching and ensuring good assimilation of the Lean basic philosophy is a key factor in its success.

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