HUMAN RESOURCES AS RISK FACTORS FOR LEAN MANUFACTURING IMPLEMENTATION

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Abstract: *The purpose of lean managements is to create and determine value and eliminate all non-value added activities. The idea of lean in the current manufacturing environment is to work and produce from the customer's perspective, and therefore to define value as a variable directly depending on the consumer of the good or service. Basically, lean is concerned with creating more value with fewer resources. LM (lean manufacturing) allows organizations to prosper in the marketplace being able to price competitively or invest in the development of products for future sustainability. Reducing the amount of waste, in example defective products, increases profits resulting in greater overall efficiencies. This paper analyses the risk factors which can hinder having a successful LM within an organization. The core focus of this study lies in discussing the risk factors in regards to human resources which can hinder organizations to successfully implement LM. Through a thorough literature and study review, the paper underlines the importance of a lean organizational culture and management. The lack of alignment of these two areas with the LM implementation will result in turning them from being the strongest implementation KPIs into being the highest risk factors and barriers for the company.*

Keywords: lean manufacturing, lean culture, lean management, human resources, waste

1. Introduction

Despite the huge benefits gained from lean manufacturing implementation, studies and practice have shown that not all companies are successful in implementing it [1]. In the area of lean manufacturing, and especially in the automotive branch, not more than 5% of German companies have implemented a lean management strategy. There are numerous reported problems and issues regarding the failure of lean manufacturing implementation [2]. In his research, Convis, the first American Toyota Motor Manufacturing President, identifies that the core of the TPS model is built around human resources, around the employee

development implemented through example, understanding and coaching. Therefore three core lean strategic directions to build LM can be derived: the philosophy, the lean tools and the lean management [3]. For the purpose of this study, the first area, philosophy, will be referred to as lean culture, meaning the lean organizational culture. Out of these three areas, the second one, tools, refers to the implementation of tools and methods according to the Toyota standards using a maximal accuracy. Examples of these tools and methods are Kanban, Heijunka, Jidoka, 5S and other [4].

In other studies the critical elements that were defined as also being “soft “factors are: management leadership and commitment; employee empowerment and involvement, training and education; continuous improvement; teamwork; effective communication; evaluation and measurement and organizational and cultural change. These factors could be defined as those being related to the human element, to the understanding and acceptability of a revolutionary system of freedom of thought and diversity of European versus Japanese tradition of thought [5].

The core of this research is based on the soft factors, in other words on the other two listed areas: the philosophy and the management. The reasons for which these two areas are mainly considered is the fact the current situation of these two areas cannot be measured with the exact precision the tool implementation can be measured. Convis’ conclusions were first considered revolutionary in comparison to his predecessors, like Ohno or Shingo, which stated that the bases of TPS (Toyota Productive System) are the tools, methods and techniques of LM [6] [7]. Nevertheless, Convis’ beliefs were proven to be valid for western organizations aiming to implement TPS.

The two areas which built the core of this study, lean organizational culture and management, will be analyzed as being equally important for LM implementation [8]. On the one hand, management has to feel that they are getting what they need at all times, otherwise they will not support the implementation, and thus the implementation could fail. On the other hand, lean organizational culture refers to the workforce which has to use the system correctly otherwise management will get inaccurate information, take wrong decisions, thus the implementation could fail.

The following chapters will analyze research results and conclusions regarding the above mentioned risk factors or barriers: the lean organizational culture and the management.

2. Lean organizational culture

According to studies in the field of lean manufacturing, LM should be incorporated within all operations, including culture. This will ensure that processes are sustainable [9].

Human development within a company means involving operators through empowered kaizen teams; building trust and teaching lean tools, thinking and techniques to everyone in the organization. From the LM perspective, human development refers on the one hand to people skills and expertise and on the other to a supportive organizational culture.

2.1. Skills and expertise

In regard to skills and expertise, lack of information on specific tools and techniques is a barrier that production companies face when implementing a lean system. If the know-how surrounding lean production is not fully applied throughout the whole system it occasionally initiates failure. LM tools and methods are standardized and have the same characteristics regardless of the organization to which they are applied.

However, the belief that LM is implemented and operated only by adopting very accurately these tools is a false one. Furthermore, LM is more than just a toolkit; it is an organizational culture and a philosophy that cannot be copied from Toyota into other organizations. LM is built through knowledge management and a bottom-up leadership style [10].

2.2. Supportive organizational culture

A major difference regarding work culture between Europeans and Japanese is that to the Japanese, Japan means essentially a community of fate. The value is identified at the micro level and encompasses

throughout the entire organization. This displays assurance to the economic, social and psychological principles. In the western culture that is a culture of individual values - which means that regarding the LM values (trust, equal treatment, employee involvement, harmony with environment), in western countries these need to be implemented, learned and accepted [11]. Main cultural differences should be taken into consideration for implementation of a lean manufacturing shop floor orientation. In the western industrial context, the organization comes first: because there is an enterprise, work can be expected [12]. The enterprise is the cause; work (employment) is the effect. In the Japanese setting, on the contrary, it is work, in the modern sense of industrial work, that is the cause, and organization is the effect.

The organizational culture represents the main success or failure factor. It is possible to copy only the methods but therefore the results consist in obtaining only a moment structure which might possibly change the next day. TPS in its core is a system which creates permanent new knowledge keeping the organization at a maximal know-how generation limit. Only copying the methods would result only in a snapshot of the current situation, which could look totally different the next day. This is exactly what sets Toyota apart: a system that constantly generates new knowledge and therefore keeps the company at all times at its performing limit. Cultural change, creating an environment for teamwork, building trust with employees and management, and ongoing training are the essential factors in successful lean manufacturing success [13]. The system can be influenced by differences in national and organizational contexts. "Japanization" is more difficult in a national culture that is very far from the Japanese values, but still in this case a Japanese organizational context (e.g. in case of a Japanese subsidiary) can help [14]. Nevertheless, the attitude of workers may be different, think, for example, of the

problems experienced implementing lean manufacturing in Japan versus in other countries. As an example from east of Europe: news in Hungarian journals show that Hungarian people are less keen on lifelong learning than is the case in other developed countries or even other CEE countries [15].

3. Management

Building a lean culture, building up trust and getting the employee's acceptance is the big challenge of implementing the lean management for managers. As already known, any new process or organizational change is psychologically perceived as a danger potential even if there are evidences demonstrating the benefits.

Lack of information in regards to specific tools and techniques is a barrier that production companies face when applying a lean system. Companies fail to acquire the adequate complete and appropriate intelligence, leading to difficulties between management and project completion. The culture surrounding lean production is not fully applied throughout the whole system occasionally initiating failure. To counter this, management utilizes the tools of lean production and establishes "continuous improvement" while forgetting the fundamental rule of "respect for people."

An illustrative example sustaining this affirmation is the result of the annual (year 2001) survey of manufacturers conducted by Industry Week magazine, and reviewed by a national engineering society (USA). As research result it was stated that 50% of the plant managers singled out cellular manufacturing (which is a tool of lean manufacturing) to be "extremely effective" but it was somewhat surprising, only 20% have widely adopted the technique [16].

The results of the statistical researches lead to relevant conclusions regarding the importance of some management aspects and the difference between "necessary" and "existing" on the management behavior level [17].

According to the above mentioned study the managerial factors that endanger current implementation of lean manufacturing into actual organization are the following four. First of all managers in their organizations are considerably more competent in the technical work than they are at motivating and developing employees. While the technical work is considered important, the lean implementers state, that it was absolutely critical to the success of lean efforts. Second of all, the personal involvement of managers is also a very important issue. Currently there is a significant failure to understand the importance of modeling the desired behavior. If managers do not map their processes, listen to their employees, or engage in disciplined problem solving, they should not expect their employees to engage in this behavior. It appears that in too many cases managers are once again viewing lean as a “program” that they will assign people to, hire consultants for, but fail to genuinely engage in personally. Third, managers’ implication in problem solving was one of the lowest scoring ones. The study showed that only 36.6 % managers were doing that and the importance of this factor to lean success was rated at 72.6%. Fourth, the ability of managers to facilitate team meetings to follow a disciplined problem solving process was rated at 30.8% and this factor’s importance was rated at 76.6 % which signals a really a big gap.

Yet another interesting result was obtained through a survey carried out by the managers from 100 small and medium enterprises in China showing some barriers to lean implementation such as the following [18]. First of all lack of information (managers not informed of lean production). Secondly, misunderstanding of lean production. This means nothing more than the fact that the implementation of lean production requires a large investment and is only suitable for large enterprises; that the lean production is only suitable for specific industries, that it originated in

Japan, and it is not suitable for others countries and that it is a technical which can be well learned as long as afford more money. Third, the staff’s resistance to lean production from an insecurity sense and finally the barrier of implementing lean production mechanically without revision according to the environment of enterprise. Regarding management level, a strong limitation is the possibility to measure lean. In order to have the appropriate tools to manage an organizational change such a lean manufacturing implementation, the management must have appropriate tools to measure the initial situation e.g. performing an initial benchmarking. Since there is no specific definition in regards to what is defined as lean, two companies cannot be assessed based upon which is leaner than the other. There is no universally accepted standard for evaluation which was found. To fully rank lean management systems, management should examine how a system is established for long-term success instead of just fiscal reporting [19].

4. Conclusions, limitations and further research directions

Results of this brief state-of-the-art study demonstrate that the key to successful TPS implementation is the total commitment of everyone in the organization and that means both employees and management. Therefore we cannot agree with the statement that “lean manufacturing represents a set of tools and a stepwise strategy for achieving smooth, predictable product flow, maximum product flexibility, and minimum system waste” because this minimizes the role of organizational culture [20]. The studied materials demonstrate that lean manufacturing is much more than a set of tools which can be implemented equally in Japan, America, Germany or Romania - this would be the simplest, easiest solution to implement them - but in reality cannot function without organizational culture which involves a considerable amount of knowledge and risks.

Although the literature so far has provided enough data regarding the spectacular results obtained by organizations after implementing lean systems, unfortunately there are fewer surveys that track the model on how to sustain these results, especially the efforts to keep these results and periodically improve them. Currently, a limitation of this and related studies is the fact that there is no specific standard “recipe” concerning operations or the necessary resources to achieve these objectives. The approach is different from one organization to another.

Further research should concentrate on analyzing and creating a successful model for implementing the “soft” requirements such as building trust, converting leadership from top down to bottom up initiatives, framework teaching and convincing the employee about lean thinking or activating and maintaining the initiative for lean at shop floor. The scope must lie in creating a standard approach, a “user’s manual”, a management lean standard to achieve the above listed objectives.

There are many risks in implementing lean methods and processes in organizations

where there is no background culture and mentality necessary for sustaining this new improvement. In the absence of such a culture, the sustainability of the results can be achieved only under an enormous organizational effort and under huge resource consumption, especially human capital, indispensable for the constant supervision and motivation of the organizational human resources resulting in a major effort to keep these structures. The main conclusion lies in the fact that the whole organization has to concentrate on shop floor. Senior managers have to be willing to be involved in the day-to-day improvements in operations [21]. Top management presence and availability at shop floor is one of the most critical points during the lean rollout of a lean management system [22].

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