LEADERSHIP IN THE ORGANIZATION: PROFILE, SKILLS AND CHALLENGES IN LEAN MANUFACTURING IMPLEMENTATION

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Abstract.
This paper aims to review the leadership management model, regarding the profile and competence of an organization facing challenges in the implementation of the Lean manufacturing program. This study was done through qualitative resource and presents some examples of success and opportunities of improvement identified in a company in the automotive industry. Historically, the necessity of managing people by their intellectual value, what represents this paper purpose, and the organizational dynamics , has led to the evolution of strategy and study of this theme in literature, mainly if we consider the personnel and leadership importance in the evolutionary process of manufacturing management towards Lean manufacturing, besides that, it is necessary to better understand the organizational structuring process, operational development, creativity and the generation of innovative ideas in shop floor process associated to the development indicators. In conclusion, this work states that the better prepared the leaders are, the bigger the company's chances to reach better results regarding, an improvement in absenteeism and participation in the suggestion process and a raise in productivity. It also shows that organizational leadership together with the adequate competence development, in association to the challenge in implementing Lean manufacturing , can generate better results for the company in short term.

Keywords*: Leadership; Organizational Management; Lean Manufacturing.*

1. INTRODUCTION

In a modern and competitive word scenario, it is getting harder to understand organizations and their complex characteristics, dynamics and their varied processes of managing personnel and how to be sure that leadership is, indeed, prepared to face challenges. In manufacturing operations, as well production processes and personnel, the company management through leadership is a fundamental factor for business success, mainly if we consider that most companies have been looking for competitiveness and cost reduction through waste elimination. In addition they have been attempting to implement the basic principles of Lean manufacturing. The success in cultural transformation depends on personnel because it is through people that companies reach excellence in operations, products, quality and productivity. The organizational structure plan must be in compliance to the company's goals and strategies and the development evaluation guarantees that its expectations are aligned to the employees. Training and development, which promote an improvement in employees' abilities and knowledge, can surely influence the company's result, not only in safety and productivity, but also in organization, absenteeism and the participation in the suggestion plan, what means more motivated employees. Controlling the results obtained, comparing the performance to the planned ones, and the monthly control are essential actions for aligned decision making focusing profitability. Through the monthly control of the financial results obtained and compared to the established budget, we can see the opportunities for study development in economic feasibility for alternatives which aim the operational costs reduction. In this context, leadership and managing competencies are considered of extreme importance regarding, profile, moral, character and intrinsic characteristics, in addition to behavior and tangible results. It is necessary to discuss about it and evaluate the methodology applicability adopted by the studied company.

2. THEORETICAL REFERENTIAL

The theoretical referential presents the following topics: Leadership, organizational structure, operational performance evaluation, roles and responsibilities, competencies, training and development, balanced scorecards and lean manufacturing.

Nowadays, it has been discussed the necessity of associating human performance or human competences with organizational performance, in order to attract , develop and keep personnel in the company to achieve the organizational goals by using human resources practices in compliance to the company strategy in wages management, recruiting and selection , career, training and development Taylor, et. al. (1996).

2.1 Leadership

Leadership is the key to the company's success in the production front line, it has a crucial active role in the Lean manufacturing system implementation, being directly responsible for supporting team members, operations, controlling the process and assuming its role in changes. The leader efficiency is based in four performance results, the main ones are: Safety at work environment; Quality including training and process improvement and also problem solving; Productivity which aims to meet the clients demand and resources management, and Costs controlling and reducing total costs (Liker; Meier 2009).

There are also other indicators, such as: training to develop the team members' abilities, the participation level in the suggestion process and absenteeism control which are related to the employees' morale. The signals of an effective leadership include high morale level and systematic execution of the team objectives (Liker; Meier 2009).

2.2 Organizational Structure

The formal organization, through the organizational structure can be considered a way for people to reach self-accomplishment, where hierarchy serves as a base for work organization, Taylor (1989) and Fayol (1994).

2.3 Operational performance evaluation

Its aim is to align the organizational expectations with the emloyees', establishing a "feedback" process based on responsibility and competence to reach organizational goals. One of the most important instruments of human resources management is the performance evaluation because through it, we can plan actions to better use personnel's potencial.

2.4 Roles and Responsibilities

Chiavenato (1999) defines as a leader: managers, supervisors, foremen, bosses, directors, as well as people managing others, being their responsibility: planning, organizing, coordinating and controlling area activities.
For Taylor (1989) and Fayol (1994) the organization in a company must consider: work division, job description, standard time, method and movements, authority, responsibility and hierarchy.

2.5 Competences

Durand (2000) affirms that the values and beliefs shared at working times , influence the behavior and collective performance and that there are three competence dimensions : Knowledge, which is the information, it is to know what and why. Attitude is determination and the desire of accomplishment and Ability, which is the technique of "know how". The competences management must be aligned to the organizational structure, the mission, vision and values of the company. As a theme of our particular interest, vision determines the company's future, its strategy and helps it to formulate directions, directing the competences development.

2.6 Training and Development

" It is convenient that the organization defines the necessary competence for each activity which affects the products and services quality , evaluate the personnel competence to perform the activity and make plans to eliminate any competence gaps that may arise" , in order to highlight the importance of making training an investment for the company as references NBR ISO 10015.

"The study of training needs must provide information which enables to outline a training program. What must be taught, who must learn, when and where it must be taught, how to teach and who must teach, Chiavenato (2000).
It is important to elaborate a training schedule of multiple functions which must be filled in by the supervisor, containing a list with all personnel names and their ability to execute these activities; it will serve as a base, so that each one can develop themselves and become multiple skilled employees Liker, Meier (2009).

2.7 Performance Indicators: "Balanced Scorecard"

For Kaplan, Norton (1997), the "*Balanced Scorecard*" provides a structure for viewing the company's strategy in the creational value point of view, under the financial aspect, growth strategy, profitability and risks. It is a performance measurement tool linked to the business strategy, containing the former and current year's results.

According to Tung(1994) it is through comparison that the deviation corrections and adaptation to chances in the plan are made.

Welsch, Hilton e Gordon (1988), highlight the importance of controlling as measurement process and real performance evaluation of a company and the corrective actions, when necessary to guarantee efficiency to reach the organizational goals.

For Liker (2004), with the advent of Toyota system of production and Lean manufacturing, the development of the company's goals at all organizational levels, together with the periodic control with the appropriate action taking, was put into practice. Before that, budget numbers, finance control and business goals were not shared, developed or communicated to manufacturing areas, on the contrary, they were dealt exclusively by the finance department.

2.8 Lean Manufacturing

The manufacturing management by lean manufacturing tools, *'Lean Manufacturing',* has been widely discussed, presenting a challenge for companies which choose to follow this direction, regardless its size or business area. In 1990, the book "The machine that changed the world" Womack et al. (1990), highlighted the Japanese production methods, comparing the mass production system used in the USA and Europe to the one Japan had been using, the Lean manufacturing system, 'Lean Manufacturing' in the Automotive Industry. From this period, the industries tried to reduce costs through consistent gains in productivity, quality and profitability.

Lean manufacturing goes beyond management processes and tools.

"Occasionally, STP, Toyota Production System, is considered a set of techniques (e.g. *just-in-time*), but actually it represents beliefs of how to develop operational excellence" (Liker; Hoseus, 2009).

3. METHODOLOGY

A qualitative approach was adopted in this work, in which the database used were information and production data, manpower, direct material inventory, invested capital and depreciation. Eisenhardt (1989) says that the case studies can be single or multiple ones. The decision of choosing a single case enables a deeper investigation Yin (2001).

It is also an action resource, which has as tools data collection, participants' observation, using diaries and documents. Adopting Selltiz et al., (1974) as a reference, considering the kinds of research proposed by the authors, this research is focused in a qualitative and descriptive approach, because it presents the characteristics of the organization or individuals and the observation of possible factors which may arise in the research conclusion, the process and its significance, which are the main focus of this work.

The object of this research shows an investigative characteristic and aims further familiarity to the problem. It has the natural environment as a direct source of data, having the researcher as its main tool. The material was obtained through people's testimonies, situations and events in order to verify how the problem usually arises (Dencker; Via, 2001).

4. COMPANY'S APPLICATION

This work was performed in a multinational company of the automotive industry, located in Vale do Paraiba – SP, this company was installed in the 1950´s and has about 8,000 employees.

Focusing in better results for the company, having the organization leadership support, its profile, competence and challenge in implementing the Lean Manufacturing tried to evaluate the organizational structure, the operational development, why leaders and employees must be creative, the results reached together with the performance indicators and present success and failures examples, the last one considered here as an improvement opportunity. The study was held from August 2009 to July 2010.

4.1 The leader influence on employees

The leader actions have a direct impact on employees' thinking, emotion behavior and actions. "The leader motivates people increasing their self-esteem and their feeling of accomplishment" Chiavenato (2000).

Figure 1, an illustration based on Rock´s figure (2006), shows that some of our habits, actions and behavior are observed by people. Our feeling and thoughts are below water level and, thus, can not be observed by others. In the case of an organization leader, their actions directly influence their subordinates thoughts, feelings and habits.

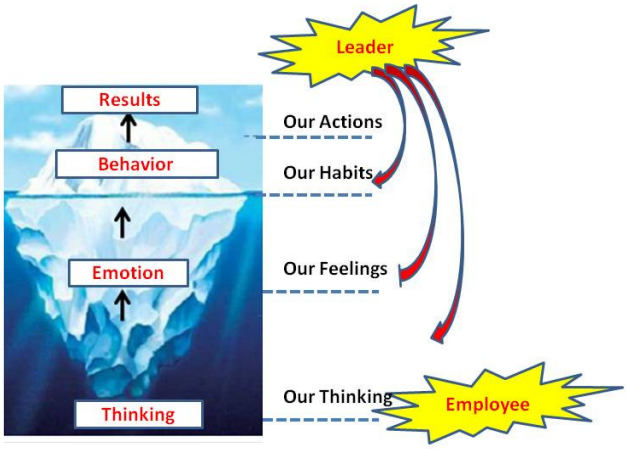


Figure 1 – The influence of the Leader actions on the employees, adapted from *Quiet Leadership*, D. Rock.

4.2. Organizational Structure.

The main factors for constituting a formal organiztional structure are : focus on organizational goals, perform activities in order to accomplish these goals, distribute administrative functions for each employee, consider the company's technological abilities and limitations. Liker (2009) affirms that leadership is able to energize and strengthen others, by intentionally distributing realistic challenges and development opportunities, nourishing the feeling of success among their subordinates. Conscious leaders monitor both individual and collective development, making people responsible for their actions and activities.

After the company reviewed the roles and responsibilities of the operational leadership levels, the following model was adopted:

Directors – establish challenging goals and have a holistic vision, act in the present but can view the future.
Managers – act as a *"coach*", the manager have the technical and functional abilities to teach and guide the subject.
Assistant managers – assume the responsibility for the results and need constant learning.
Group leaders – are conscious of the importance of challenges, want to put them into practice in day to day basis, and focus on production.
Team leaders- are committed, however focus on their team only**,** do what is required and wishes to learn and improve the processes.

The concept of teamwork, adopted by companies, aims the employees' interaction through activities which promote teamwork: specific daily meetings and monthly team meetings, recognition programs, participation in the continuous improvement process, absenteeism reduction program, physical environment improvement and the leadership presence in shop floor, among others.

The organizational structure was reviewed together with the business unit's strategies, providing an area for continuous improvement, aiming a better support to the operational areas leadership, agility in implementing lean manufacturing tools, and consistency in obtaining results.

Figure 2 shows the organizational levels adopted by the studied company; the manner used wants to demonstrate that the levels in which the company must act are *Planning, Organizing, Staffing, Directing, Coordinating, Reporting* e *Budgeting*, which are necessary so that the other company's levels successfully perform their responsibilities and achieve better results for the business.

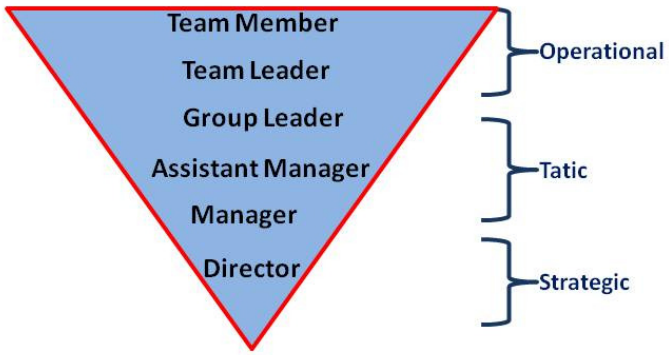


Figure 2 – Organizational structure.

Figure 3 represents the percentage of leadership levels distribution in the total personnel of the studied company. Here, "employee" is operational employees without any leadership attribution.

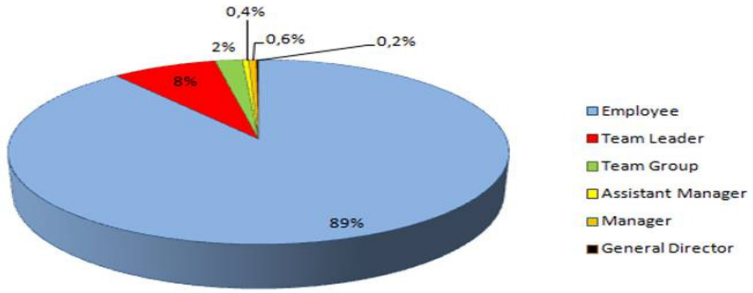


Figure 3 – Leadership levels distribution.

4.3. Performance Evaluation Process

A performance evaluation process was adopted, in order to align the company's expectations in relation to the functions, based on each function roles and responsibility; the roles address "what to do" and responsibility "how to do, and the knowledge, ability, behavior, competence, being considered by the company, necessary for the employee to successfully achieve the organizational goals.

Figure 4 is an adaptation of the three Competency dimensions, Durand (2000). Both inferior extremities represent the knowledge and abilities which are going to be treated as a group by the studied company as "development" and most of times it will be developed through theoretical and practical training, corporative games and organizational development tools, while "Behavior" must be developed and monitored by formal, feedback and constant self-evaluation.

Behavior at the leadership level, besides determination, is the attitude of acting that is considered of greatest importance in the aspect of leading through examples, because the company believes that the leader behavior is most of time copied by their subordinates, influencing, incorporating attitudes and practice in all organization.

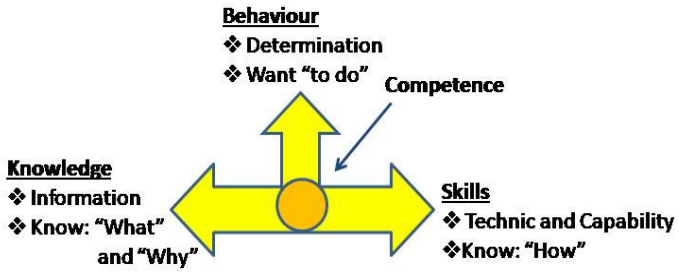


Figure 4 – Competence and its dimensions. Source: Durand (2000)

Figure 5 illustrates the concept of the performance, plus the employee behavior that leads to the result, which can be positive, if both are positive, and negative if one of them is negative.

Figure 5 – Evaluation chart. Source: the studied company

4.4. Leaders Training and development methodology.

The company uses training tools to prepare people for a function and development tools for professional growth aligned to the organizational needs.

At first, it was made an analyses in details of the current situation of the company's leadership levels in relation to the organizational characteristics, behavior and leadership abilities, and , second , what was expected from a leader , with vision and ability, and cultural chances necessary for the implementation of lean manufacturing. This analysis was the base for grading and comprehending different levels of leadership in relation to what is expected from this organization level.

Therefore it was possible to create a chart for migration strategy in leadership levels, so that the leadership training and development were adequate for each level in the organizational process.

Table 1, exemplifies the levels considered by the company as leadership level migration model considering the organizational characteristics , and the leader's knowledge , abilities and behavior, which served as a base for the training plan developed by the company. The first and second model levels were where most of leaders were before the training plan.

Leadership Model		Level I	Level II	Level III
Organizational Characteristics	Competence	Low	Moderate	High
	Commitment	Low	Variable	High
	Performance	Low	Variable	High
	Participation in Goals Definition	Poor	Moderate	High
	Strategy	Short Term	Medium Term	Long Term
	Procedure	Complicate	100% Applicable	Clear and Applicable
Behavior and Skills	Leadership Behavior	Manage Daily Business, Reactive	Focus on team and goals, Supportive	Strategic visioning, Delegate
	Strategy	Short Term	Medium Term	Long Term
	Management Style	"I decide"	"We decide"	"You decide"
	Comunication	Poor	Medium	Effectiveness
	Lean Manufacturing Knowledge	Low	Medium	High
	Team Work	No Team Concept	Functional Teams	Self Managing Teams

Table 1 – Leadership Level Migration Model.

Based on the chart, migration model of leadership levels and the current analyzes regarding where we want to be in the next five years, 100 hour- training and capacitating schedule was defined, beginning in August 2009 for three years, in order to align, integrate and develop leadership to perform their paper and responsibility in an effective and continuous way, following the lean manufacturing principles and server leader.

The architecture methodology of leadership , which represents 20 out of 100 hours of training and development is the "LOMINGER" (70% learns by doing an activity , 20% through problem solving, special activities and guidance and 10% learns by formal training.). (Lombado; Eichinger, 2004).

The general skills to be developed in the first module referent to the first year, were: communication, interpersonal relationship, roles and responsibilities skills development, relations at workplace, problem solving, business understanding and lean manufacturing attitude.

The first part of module 1, the leadership training and development plan, focuses in the lean manufacture. The second brings the knowledge of support areas activities. The third is a program called "*Shadow*", where the leader to be trained follows leaders of the clients and suppliers areas, meanwhile the fourth part is practicing leadership being monitored by "coaching", summing up 100 hours annually.

Figure 6 briefly shows, what was planned for the first module in leadership development.

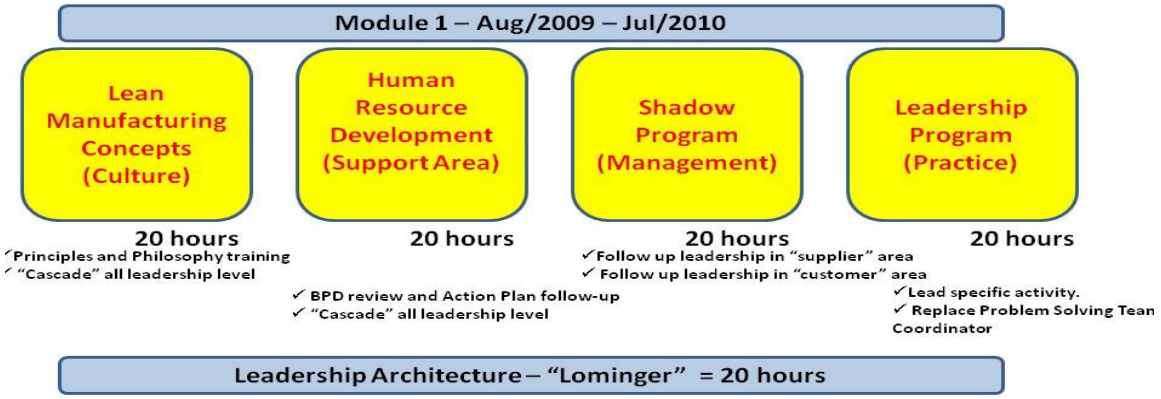


Figure 6 –Leadership Development Methodology.

4.5. Development Indicators

The authors entirely agreed, for example Sink; Tuttle (1993), Hronec (1994), Moreira (1996), Kaplan; Norton (1997), Campos (1998) and Liker and Meyer (2009), that it is necessary to measure the processes development and the measurement system must be aligned to the organizational strategy and processes. Such authors suggest using quality data, productivity and costs.

Leadership must monitor these indicators, comparing the results obtained in their area to the goals previously established at the beginning of the year. The results obtained are not in compliance to the established ones, an action plan in order to reach the expected results must be put into practice.

Figure 7 shows a "*Scorecard*" applied to the studied company, according to the concepts suggested by the authors above, considering the following indicators: Safety, Quality, Productivity and Costs. It is highlighted that in the indicators the people follow absenteeism, suggestions given and approved, the continuous improvement and innovation workshop results, and the time spent for training and developing leadership.

It is also aligned to Liker e Meier (2009): "a leader efficiency is based in four performance results: Safety, Quality, Productivity and Costs".

	Performance Indicators	2008	2009					2010							Target
			Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	
Safety	Number of Accidents	4	0	1	0	0	0	0	0	0	0	0	0	0	0
	Lost Work Day Case	1,56	1,14	1,10	0,92	0,89	0,88	0,87	0,86	0,85	0,84	0,83	0,82	0,81	1,09
People	Number of Employees	2006	1839	1837	1843	1857	1841	1849	1848	1845	1835	1802	1802	1801	1802
	Absenteeism (%)	2,2%	4,65%	4,40%	3,93%	3,80%	3,70%	3,50%	3,10%	3,05%	3,00%	2,80%	2,75%	2,60%	3,2%
Quality	Assembly Line (number of defects)	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	First Time Qualidade (%)	97,8%	98,7%	98,6%	98,5%	98,9%	98,9%	99,0%	98%,9	99,0%	99,0%	99,2%	98,9%	99,0%	98,9%
Cost	Inventory (R$ Mi)	22,5	12,2	13,3	11,5	11,0	11,8	19,5	18,6	16,4	15,4	15,2	14,2	13,9	20,0
	Overtime (%)	16,1%	17,2%	23,0%	12,3%	16,0%	10,4%	6,6%	4,8%	4,0%	6,4%	6,1%	6,6%	5,8%	6,6%
Environment	Energy (cost per unit)	0,104	0,106	0,105	0,104	0,097	0,093	0,104	0,105	0,105	0,104	0,103	0,102	0,101	0,106
	Water (cost per unit)	0,154	0,162	0,164	0,137	0,135	0,128	0,156	0,157	0,159	0,156	0,152	0,147	0,144	0,160

Figure 7 –Scorecard of the studied area.

4.6. Obtained Results

This study covers the period from August 2009 to July 2010, when all work was performed. The goals established by the company direction were:

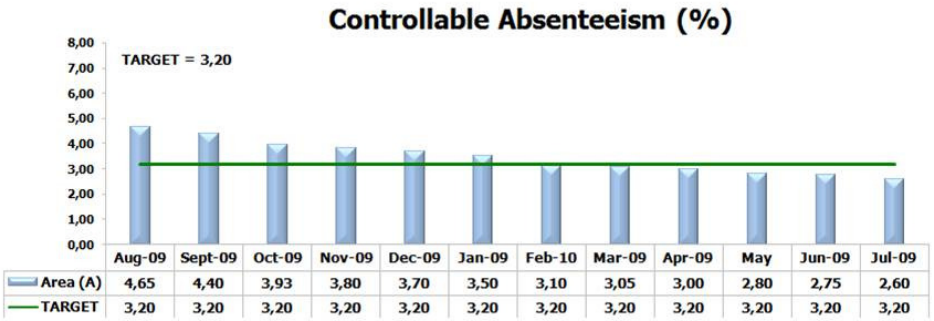
- An improvement in productivity in 10% by reducing the absenteeism indicator in the period of a year (2009 to 2010).
- Leadership Training in 100 hours annually.
- Ana increase of 17% in the participation in the suggestion process.

The organization benefit from the leadership model applied and from innovation and continuous improvement workshops, without which the results in safety, quality, significant cost reduction would not have been achieved in such a short period of time.

The company expectation of 10% in productivity gains, in the first semester of implementation, was achieved. All leadership was subjected to the training and development new methodology, generating a leveled "critical mass", and more focus in the business results.

4.6.1 Absenteeism

Figure 8 shows a drop in the percentage of employees' absence, what resulted in an employees' higher commitment, a higher motivational level and a better comprehension of the business, among other relevant factors.



	Aug-09	Sept-09	Oct-09	Nov-09	Dec-09	Jan-09	Feb-10	Mar-09	Apr-09	May	Jun-09	Jul-09
Area (A)	4,65	4,40	3,93	3,80	3,70	3,50	3,10	3,05	3,00	2,80	2,75	2,60
TARGET	3,20	3,20	3,20	3,20	3,20	3,20	3,20	3,20	3,20	3,20	3,20	3,20

Figure 8 – Gráfico de Tendência do Absenteísmo.

4.6.2 Suggestion

Figure 9 illustrates the suggestion volume given by the employees in the period and their quality (considering the number of approved ones) what shows more motivation in contributing with new ideas, besides a better comprehension of the business by the number of approvals.

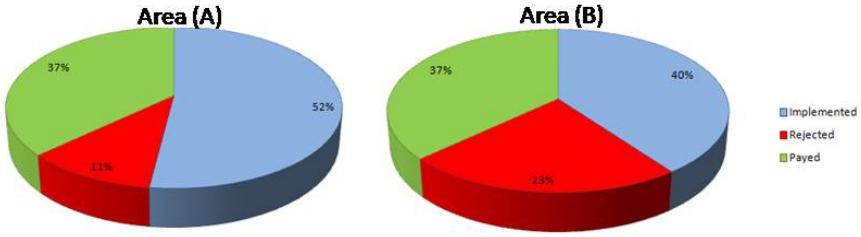


Figure 9 – Suggestions follow-up by area.

4.6.3 Innovation and Continuous improvement *Workshop*

The objective of the *Workshop* is to focus in the continuous improvement process through personnel and leadership participation. The goal is that the team members, the team leader and the group leader, use their creativity to generate ideas, improving the process of looking for better results for the business. For example, eliminating waste when walking, moving materials unnecessarily, and waiting for products and tools changes, this improvement can be in ergonomics, safety, quality and productivity.

The workshops happen every week and each work team has to participate at least twice a year, or every time a chance in the product or in the process happens.

Workshop benefits – *For the members of the team*: It reduces physical effort, eliminating waste operations and balances operation loads. For the team leader: makes training "on the job" easier, and the shifting among other activities as well the Training Matrix control, for the *Company*: Improves indicators, Safety, Personnel, Quality, Productivity and Costs.

Figure 10 shows an example of improvement generated an innovation and "Continuous Improvement Workshop", resulting in a time reduction in the operator displacement, reducing waste when he moves, improving work conditions for the employees and consequently increasing productivity.

Figure 10 shows a Workstation in the assembly line and the way the parts used in the assembly are organized in the studied company. On the left side, in the picture, "Before the *Workshop"* the red lines show the operator route, "come and go", to get a part in order to assemble in his workstation, which took him 15 seconds. On the right side of the figure "After the *Workshop",* one can notice that the red lines related to the operator's displacement were reduced for 7 seconds, increasing the productivity, considering that with the reduction of time wasted for the displacement, what does not aggregate any value, can be absorbed by an activity which aggregates value, in one of the workstations analyzed in the *Workshop.*

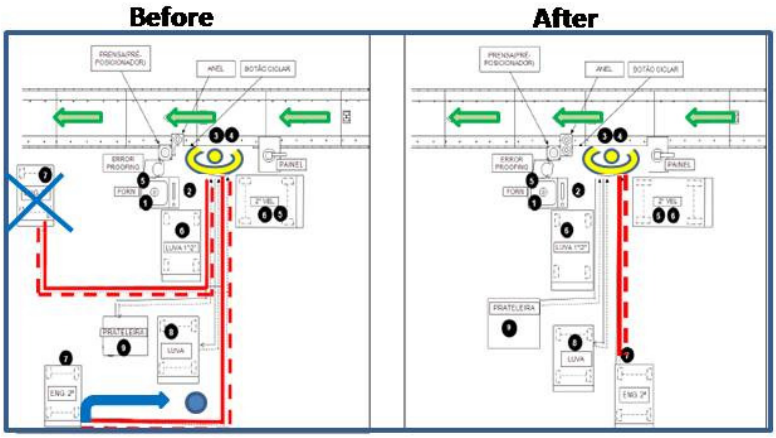


Figure 10 – Employees Displacement Representation.

The results obtained through the Innovation and continuous improvement *Workshops* are presented in a report of one page, summarizing the time current situation, "Before", and the results obtained by the participant team time "After" the *workshop*. The CT is the complete Takt *Time*, which is the total time available for production, divided by the required production, and which includes the AV, the time that "Adds Value", and the NVA, in which time represents "No Value Addition" to the activities. The CTT that is the Current *Takt Time*, being Takt *Time* multiplied by the efficiency time defined by engineering for production and the VPH that is the Volume produced per hour.

5. FINAL CONSIDERATIONS

The purpose of this work was to review the leadership management model, in relation to profile and competence, at the organization towards the implementation of Lean Manufacture concepts. Simultaneously, we tried to evaluate the structure and organizational practices, areas considered operational support, employees' participation process in generating new ideas, viewing a high commitment, valuing motivation and creativity.

We can say the that the strategy adopted by the studied company was assertive in the leadership management model concerning the profile and competence, focusing and reviewing the levels of the organizational structure, in the migration of leadership styles and in the plan of leaders' development, as well as in the definition of results together with evolution in implementation, which could demonstrate in a short period of time, its efficiency.

The biggest challenge, from now on, is "*sustaining*", continuing the process after its initial implementation. Some "improvement opportunities" such as lack of a long term strategic planning halted current results in the past; as leadership was not prepared for changes, challenges had an inadequate personnel management, some leaders were promoted taking into account only their experience and technical knowledge , without any appropriated training.

The leaders, who had been promoted for some time, became adequately skilled for the function.

It can also be mentioned that as the "Lean manufacture" theme was unknown, many leaders defended themselves pleading that there is a lot of burocracy in this system. In order to solve this, a specialized team was formed to implement the concepts, thus the responsibility for the implementation success and the culture transformation of the plan, was taken from the leadership.

The "leadership example" was an essential factor in the daily behavior inside the company, in order to reach all goals and for the cultural change to happen.

It was concluded that the first step on the long run to prepare the organization and leadership to implement the principles of Lean Manufacture, was given by the company and it is believed that the answer for the question "what is the difference between companies which reach success by tools implementation and others, which at the same time after many attempts, do not get the expected results?", it is the leadership preparation to transform culture. There was much learning, not only with the success obtained, but also due to some failure which was considered here as real "opportunities of improvement".

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