International Journal of Latest Engineering Research and Applications (IJLERA) ISSN: 2455-7137

Volume –06, Issue – 06, June 2021, PP – 01-16

The cultural impact in centenary experience on LEAN management implementation

Fernando Acabado Romana (Ph.D.)
Atlântica University Portugal

Abstract: Galucho SA is a Portuguese industrial company founded in 1920, remaining its shareholder body over time and to this day within the same family. It is today and since 2014, managed by the third and fourth generation, assisted by a group of professional managers, one of whom is a member of the Board of Directors together with the family elements. The initial idea of the intervention was prepared for the advanced change in the models and management systems, until then supported in the logics and principles of "Mass Production" (Womack, Jones, & Ross, 2010), for the philosophy of "Lean Production" with all the significant impacts of organizational transformation (Quinn, 2006) and Ledbetter (2018). The work goes through several phases, which analyse the principles of strategic management, definition of objectives and effective implementation of strategies (Grant, 2016). The initial change would always have to be supported in fundamental pillars of action, in which we highlight the clear definitions of the Purpose, the study of Processes of greater preponderance in the management of the company and the clear involvement of people at all hierarchical levels fostering learning (Shook , 2010) and (Burkett, 2016).

Keywords: Organizational Change; Organizational culture; Leadership; LEAN management; Application Model.

Introduction

The great challenge would always be the coexistence of the experience and history of the company with the application of modern and current management techniques and tools, considering the strength of the name and not the brand of the organization.

For the development of the company's fundamental organizational pillars, strategic base axes were created, which allowed to elaborate the action plans that support the capacity to implement the basic ideas of each of them.

In the specific case, the strategic axes were defined and registered from a meeting of managers, carried out and organized by the top management, and then their conclusions were presented to the company's shareholders, considering that this missive of what would be the company for the year of 2020 and beyond, namely: High levels of communication; Improve teamwork; Participation, involvement, commitment of all people; Listen and visit the Clients; Work with Quality and Safety and Be Resilient.

As a way of developing the defined, negotiated and approved strategic axes, we are monitoring its evolution through the EFQM (European Foundation for Quality Management) model, which also allows us to dilute the accentuated hierarchical effects to a more flexible and collaborative culture (Lopes, 2016), thus enabling leadership based on competencies and relationships in order to a networked culture.

The basic idea understood would always be the demonstration capacity that the management culture in Portugal, or of the Portuguese managers, is in line with the application of own models of management of the organizations, supported in systems developed in a holistic way and that lead the performance in its several strands or pillars.

Methodology

Change and Organizational Development Project

The so-called "Project for Change and Organizational Development" (Kotter, 2008) was the model chosen by top management to ensure the necessary change process, as well as compliance with the business plan.

The model to be developed is supported by three fundamental pillars that allow its development in phases, considering the permanent monitoring and evolution: (i) Management System - Consolidation and Sustainability; (ii) Themes: Context, stakeholders, leadership and strategy; (iii) Lean Global Management Philosophy (Womack & Jones, 2010).

Management System - Consolidation and Sustainability (context)

Considering that we want an innovative and continuously learning organization, we intend to develop from a theoretical point of view the EFQM model and then apply the improvement and management actions in each one of its aspects in order to promote and evaluate the permanent and continuous improvement.

We then describe the model from the generic point of view, showing the improvement actions chosen by the top management of the company, considering the connection of the functional areas to the points treated in the respective activity plans described in point 2.

In the concrete case study, top management conducted its priorities for action and follow-up in the same intervention logic, highlighting the actions in terms of direct intervention in (i) leadership training (passing to intermediate levels) (ii) policy definition (iii) redefinition and management of business processes (LEAN implementation works) (iv) performance indicators (follow-up and performance using the Scorecard).

Phased implementation

The project was defined in six phases for its implementation in which the basic idea was the management of an implementation process, considering the fundamental aspects of experimentation, communication, diffusion and adoption of best practices. In this way the following sequential and evolutionary phases were evidenced, as we described: (i) Definition of Macro Project with executive management - present, explain and discuss the model in November 2015; (ii). Communicate to the middle managers - present and explain to all heads of the areas and philosophy and objectives to start the process in January 2016; (iii) Pilot areas - jointly define the initial area or areas of intervention and implement in January 2016 (note: integrating comments and opportunities for improvement of external audits of quality and customer certification); (iv) Results Evaluation - implement the procedure in the pilot area (s) and then evaluate results in March 2016; (v) Expand by organization - define the following areas and continue the process in order to achieve 80% implementation by November 2016, in April 2016; (vi) Continuity - continuous and permanent improvement should enter into the evolving organization's "lifestyles" in July 2016, at which point management and improvement cycles should be supported in the DMAIC / PDCA as complementary methodologies (Basu, 2011).

Improvement Cycles

Knowing that the decision on the methodology to be adopted falls on the DMAIC cycle, complemented by the PDCA cycle, it will be interesting to compare the two methodologies and these with the methodology of project management, often used in isolated project management, such as the improvement or the investment in a certain critical process at a given time (Nokes, 2007) and (Basu, 2011).

Thus, in [Table 1] we compare the three methodologies showing their complementarity:Our choice of follow-up and use was clearly based on the DMAIC cycle, complemented by GP (where applicable) and PDCA (for timely improvement cycles), so we characterized it in detail in [Box 2] (Basu, 2011).

The description of each phase of the DMAIC improvement cycle, adopted in the present case study, should then be complemented and configured with the inclusion of the Lean management tools to be used in each of the phases,] (Basu, 2011).

The use of the various phases of the DMAIC cycle, as well as of the respective tools, should always keep in mind the involvement of the people of the teams in the areas under analysis.

Follow-up Model

The Management Follow - up Model is the BSC - Balanced ScoreCard (Kaplan and Norton, 2016), described and designed on the basis of strategic maps organized in four perspectives, namely: Financial Perspective; Customer Perspective; Perspectives on Internal Processes and Perspectives on Learning and Growth.

The philosophy used and recommended by Kaplan and Norton is the organization of the management indicators, by the four elements of the model, in [Table 4] we illustrate the specific case of our study:

The report will always be presented in graphs against objectives, considering the historical evolution of each indicator, time and space for eventual comments and frequency of follow-up (Kaplan and Norton, 2016).

Evolution according to the Model (EFQM)

In the tables and graphs below, we can verify the score of each of the areas of the model, which has as maximum possible score 1.000 (thousand points), divided by the various areas according to their respective percentage weights, still within their two fundamental elements of means and results.

According to the table and with the appraisal applied to the executive management of the company the results were obtained in [Table 2] (January 2016).

From reading the results obtained in early 2016, we observed the global value of 54%, representing 540 points in 1000.

In [Table 3] we present the results, which we consider to be intermediate for the current management cycle, considering that the end of the observation would be the end of 2018.

We observed that 73% of the total value represented 730 points out of 1,000, and that the improvement was developed in all elements of evaluation, with particular emphasis on the evolution of leadership and processes, not being extraneous to the implementation of the Lean management philosophy Shook, 2010 and 2018).

Risk management

In today's changing context, shareholders have been clamouring for greater transparency about the risk's organizations face. There is growing recognition that proactively coordinating all risks in an integrated way is critical to success, so traditional approaches to risk management are no longer sufficient.

Risk Management Model

The risk management model was based on the following five areas considering the business risk control approach (Kendall, 1998): (i) Market Risk - Measured by sales results and margins against the budget, BCG Consulting Group) and Porter's five-force diagram in Grant, 2002; (ii) Credit Risk - Considering the approval and policy of credit to be granted, insurance and obtaining credit from third parties and banking; (iii) Operational Risk - brand image and company reputation (NPS), product quality, project development, contingency plans and incident recovery (DRP); (iv) Legal risk - Management of Contracts, present and future litigation, compliance with commercial, labor and tax legislation; (v) Risk of Information and Communication Systems - Classification of information required in "confidential" and security of information and communication systems.

Interested parts

Reason for Existence - Value Creation

Value creation, in fact, is the essence of the existence of companies, was defined as the generation of results for customers and shareholders, based on an evolutionary diagram supported by several pillars and strategic actions that we described (Black, Wright, Bachman, 1998): Define objectives in all areas of the company; Solve problems - what problems? - it will be the work to be done; Work to be carried out through the intervention and through the business processes; Involving the teams and having the means available and finally we have to improve and evolve, as: (i) By increasing the knowledge and skills of our people; (ii). Improving attitudes, behaviours, leading by example, this is in fact the management system, including the meetings we hold to track the evolution of processes and objectives (Cameron, Quinn and DeGraff, 2006).

Performance Model and Objectives

In the concrete case study, the principles of action that support the Performance Model and Objectives were developed: (i) Managing People for improvement, adaptability and results; (ii). Increase performance levels through process practices; (iii). Practice and experiment to become more comfortable in the field of processes; (iv) to work with greater individual and collective effectiveness.

LEAN transformation

The management of the change process that supports the Lean philosophy's implementation path from the behavioural point of view is based on its five-dimensional characterization and on a fundamental missus that is "not to speak in a vague way" (Shook, 2010). The dimensions of support to the process of change are: (i). What typology of problems we are here to solve; (ii) knowledge and skills of the people; (iii) Work to be performed permanently and follow-up model; (iv) Management and Behaviour System; (v) Ability to think every day to improve things (Shook, 2010).

How the LEAN System Works

The operation of the Lean System is directly related to the logic of creating value for clients and shareholders, in this perspective the behavioural dimension supported by strong leadership styles and guided by the example management and the development of long-term, internal partnerships and external (Shook, 2010).

The System is not in line with certain management situations, which it repudiates and avoids through good process practices, the main situations are related to late deliveries to clients and the maintenance of high levels of inventories, cause treasury limitations and maintain assets without utility (Womack and Jones, 2016).

In terms of management approach, financial indicators should not be the basis of the follow-up model, but rather the operational ones, making the former a natural consequence of the latter, reflected in the budget (Womack and Jones, 2016) and (Basu, 2011).

Model LEAN - Galucho

In the Galucho case study the Lean management system was designed and conceived in four fundamental areas of basic performance, which are then developed according to the concepts or processes that support them, in [Table 5] we represent the conceptual model with the natural interconnection to the defined strategic plan and taking into account the four areas of action that we describe as: Definition of the Purpose of the actions; Involvement of People; Continuous Improvement Cycle (PDCA); List, description and transformation of all company processes, (Shook, 2010).

After the representation and construction of the conceptual model we must implement the Lean - Galucho design model, which is the application of the concepts to the company's reality. We represent the scheme of the model in [Table 6].

The application areas coincide with the conceptual model in terms of macro definition, we will then develop the model in practice and in numbers, [Table 4].

The significant improvements in operational indicators are reflected in the company's economic and financial indicators, through reduction and optimization of costs, and also improve its competitiveness through the adjustment of the sales price strategy to the reality of the markets, greater agility in change and better performance in terms of quality (Nicholas, 2010).

Evolution of LEAN Implementation

The evaluation model adopted for the evaluation of the LEAN implementation level was based on the LAI - Lean Advancement Initiative of the MIT - Massachusetts Institute of Technology, which presents the analysis of the system in six fundamental points: Involvement of People; Value creation; Value Chain; Flow of Processes; Notion of "Pull" and Index of Perfection.

The following are four key levels of Lean implementation in organizations: (i) Level 1 (use of Lean tools); (ii) Level 2 (creation of flow in processes); (iii) Level 3 (development of a Lean system); Level 4 (consolidation of the system with industry automation 4.0).

In the case of Galucho in 2016-2018 we present an average score of 2.63, distributed by the six factors according to the following graphs.

The values show an implementation level of 66% in relation to the objective, knowing that according to the LAI / MIT model the actual level of (2.63) compared to the maximum of (4) represents that the organization is in the implementation phase process flow and in-line systemic approach represented by level (3).

The LEAN Method followed

The Lean method followed is supported in a system of balancing and integrating three fundamental concepts of all Lean models, which are definition of the Purpose for the realization of all actions, projects and programs, defined as the reason or reasons why it is going to be realized event, whether strategic, tactical or operational (Womack, 2016).

Flow Time

In [Table 8] we represent what in practical terms is meant by value and waste, in order to illustrate the ways of acting in order to maximize the former and reduce or eliminate the second, core essence of the Lean management philosophy.

The functioning of the system does not depend on how each part or area acts, but how each one integrates with the others.

Leadership

Value Chain

In the concrete case study, we intend to support the execution of strategies, implementation and management of the new governance and performance model, in a leadership philosophy known as the "Global Value Chain of the Company - Operational Excellence", which allows the optimization of (Lopes, 2011, and 2016), which is a new approach, less hierarchical, more participatory and responsible (Lopes, 2011 and 2016) .

The value chain we speak of enables the company's leadership in an integrated way to achieve the results expressed in the objectives, thus creating value for clients and shareholders (Cameron, Quinn and DeGraff, 2006).

In practical and real terms, the top leadership is cemented and implemented through an executive management body "executive committee", represented by the directors and coordinated by the CEO that establishes the connection with the Board of Directors, organ in which it takes place as Executive Director.

Plan of Action - Leadership

The set of these actions and their integration with the company's strategic principles base and main performance of the top management, allow a permanent contact with the operational terrain (Gemba) (Womack and Jones, 2006), thus doing justice to one of the basic principles leadership role in the logic and spirit of Lean management - "go with your own eyes and lead by example" (Shook, 2010).

Value Creation Flows

The identified flows are (i) the productive flow, supported by the factories and their productive processes; (ii) the flow of materials, referenced to all movements of materials within the company and by the values of inventories and their locations; (iii) the flow of information, usually referred to as "from ordering to receiving the customer" (Womack and Jones, 1996).

Productive Flow

The great organizational innovation in the area of operations and the production flow of the company was based on "Takt Time" - contribution of each operation to the total production process, which allowed for profound changes in the form and management model of industrial processes, allowing its balancing (Womack and Jones, 2016).

Table 6

As we can see from the figure, we have the importance in terms of weighting in the overall process of each of the productive units, with parts and components representing 38.74%, manufacturing and assembly 54.45% and manufacturing and complementary assembly 6.81%.

Flow of Materials

The flow of materials was designed to follow the production flow, considering its continuous and continuous optimization, with the clear objective of working without the wastes of waiting, lack of materials, excess production and excessive stocks.

Table 7

After analysing and implementing corrective measures, the company's global stock fell by 38% in 3 years, representing a significant gain in turnover, improvement in working capital and, consequently, in cash flow. This in terms of results, from the operational point of view improved the liberation and management of space, procurement and procurement policy and also the reduction of the levels of risk of obsolescence.

Flow of information

The organization and the good management of this value chain are of central importance for the success of almost all the processes of the company, considering that they will be the following four areas: (i) Markets, clients, marketing and engineering; (ii) Business Management; (iii) Production planning and control; (iv) Shipment to customers, which we detail and explain in [Box 9].

The optimization of the information flow was based on the PDCA tool, previously presented, that allows the constant verification and correction of the processes (Womack and Jones, 2016).

Strategy and Deployment

Business Chain

The immediate bet markets are clearly competitive, but they will be future bets, such as: Iberia, Algeria, France and Central and Southern Africa. These markets have different approach characteristics, but there are some common denominators, such as aggressive price policies, the usefulness and appropriateness of the solutions, and a great deal of sensitivity to the various marketing policies, whether they are advertising, or distribution channels and services. after-sales service (Kotler, 2014).

In [Table 8] the main illustrative values of strategies for the development of the business chain are illustrated.

In general terms, a 38% growth has been achieved in which international activity, considering the nuance of the Spanish market, currently accounts for 70% of the company's business, in which it previously represented 59%, knowing that it still exists also a strong growth in the domestic market.

Company Competitiveness

The competitiveness of companies is supported by the ability to execute their strategies, which in turn is supported by various elements of development and evaluation, from the constant adaptation of their structure, optimization of business processes in favor of productivity increases and optimization and cost reduction (Haidar, 2012).

The interconnection of these factors with the Research & Development capacity, translated into the creation and launching of new products, services and solutions, for customers and markets, are factors of measurement of competitiveness with particular importance (Grant, 2016).

In [Table 9] we show the reduction of costs in the perspective of the optimization of processes reducing the categories of waste related to excess inventories, rework operations and waiting times.

In addition to the three cost areas highlighted in figure 15, the management costs related to the budgetary deviations that represent in the specific case of (27.9%) are also subject to action, which are in the first line of action of the Company. responsibility of the company's executive management structure, thus promoting accountability and greater effectiveness in solving problems.

In [Table 10] we report the cost analysis from the perspective of the quality costs according to the methodology of (Crosby, 2009), that allows the observation and the decision making and measures more directed and effective to each one of the elements of cost and consequently a greater preponderance in its rationalization or optimization.

From the analysis to the picture of the figure we observed that the prevention category (35%) is connoted with rationalizations of structure and framework costs, the evaluation category (25%) is related to models and methods of quality management betting more and more on scientific aspects of statistical control and self-monitoring.

In the following categories we relate internal and external faults, internal faults (30%) typically related to manufacturing nonconformities or support areas, which must be followed and corrected by quality reports and external faults normally attributed to defects found supplies or third-party information.

The improvements of (14%) already verified and of more (12%) objectified, will surely be implemented through the combination of sales growth and cost rationalization, concretely doing more with less (Womack and Jones, 2012).

Observation of Management Indicators

The management indicators were outlined in three fundamental categories, which allow us to follow and evaluate the performance of the processes, as well as the operational and financial impact of the integration of the various categories, which are: Competitiveness Indicators; Economic indicators; and Operational and Financial Indicators (Hejazi, 2015).

Competitiveness Indicators

In [Table 11] we present the main competitiveness indicators adopted and developed, through their application and adaptation to the reality of the organization and business, with the principles of increasing the qualitative and quantitative competitiveness indexes.

From the observation of the evolution of the competitiveness indicators, we can highlight the qualitative improvement through the NPS (80%), by listening to customers' opinions about the company's performance in various parameters.

Operational, Economic and Financial Indicators

In [Table 12] we analyse the evolution of the economic and financial indicators, first table, but mainly the link between the operational indicators and the economic and financial indicators that translate into a consequence of the good performance of the previous ones.

The evolution of the economic and financial indicators treated are clearly the consequence of the operational indicators, as shown in table 2 of figure 17, where the evolution of values is in stock rotation (3.2%); Working Capital (4.65%); EBITDA margin (15.6%); and Net Cash Flow (46.7%).

Table 10

The clear implication of value creation comes from sound management to reflect the results of the actions, in the return results to shareholders, represented by the Working Capital, EBIT and Net Cash Flow indicators (Emiliani, 2007).

Financial Impact Lesson

By working on the operational indicators, we already know that the financial impact has to be a natural consequence of their good performance, so the Profit is always equal to the Price minus the Cost, never, the Price is equal to the Cost-plus Profit, Profit is an opinion, Cash Flow is a reality. The generation of value is measured by the Return on Invested Capital indicator, which is shown in the formula: RCI = EBIT / Sales (X) Sales / Investment, where the first factor represents the profit margin and the second the return on capital (Emiliani, 2007)

Results

According to (Cameron, Quinn and DeGraff, 2006), the implementation of a management model will lead management to a leadership style conducive to value creation and results in terms of quality, human and financial capital based on effective organizational performance.

Development and implementation of the strategic plan: Strategic Map, Actions and Strategic Objectives, until then non-existent.

Plan of Activities: Annual objective, maps of implementation of the strategy, deployment by functional areas and documents related to the strategic plan, which allow the common guidance of management units, such as (i) Market Studies; (ii) Business Plans; and Quality Plans.

Project of Change and organizational development according to Kotter (2008), was the model chosen by the top management as a way to guarantee the systemic implementation, based on the following pillars of action: (i) Top Management Actions; Definition of Objectives; and (iii) Implementation Practices, supported by the change in Company Culture (Values and Behaviour).

(Context), the systemic thinking of Katz and Kahn (in Grant, 2012), through the open systems model, evidence the general environment and the organizational context creating the process of functioning through the inclusion of resources to the production of "outputs", modified by the elements characterizing the context, such as: (i) Culture; (ii) Objectives and Strategies; (iii) Behaviour; (iv) Processes; (v) Technology; and (vi) Structure. In our localized approach at the level of the EFQM model.

Discussion

Phased implementation, with the creation and development of pilot areas, is particularly beneficial to the organization's culture, and also engaging people and the cascading communication process.

The entry into the "way of life" of the company when defining the long, medium and short-term improvement cycles, in which the use of the DMAIC and PDCA cycles in an integrated and complementary manner (Basu, 2011), through the Lean tools.

According to (Kaplan and Norton, 2014) the use of the Balanced Scorecard allows the organization and correct allocation of the management indicators, thus ensuring its correct and effective follow-up to the objectives.

Improvement of the overall EFQM index by 35%, passing from one year of 540 to 730 points.

Implementation of the corporate risk management model based on five pillars: (1) Market Risk; (2) Credit Risk; (3) Operational Risk; (4) Legal Risk; and (5) Information Systems Risk (Kendall, 1998).

The development of the model considering the Stakeholders: Clients and Shareholders, leading to value creation, which according to Black, Wright and Bachman (2008) is achieved by setting goals in all areas of the company, solving problems, optimizing the processes of the business and involving the teams with the appropriate means. According to Cameron, Quinn and DeGraff (2006), the strength of value creation stems from the model of action and achievement of objectives through the LEAN transformation (Shook, 2010).

Strongly active behaviour of top and middle management, according to (Quinn, 2004), transition from the normal state to the fundamental state of leadership.

Management of skills, knowledge and talent, providing the success of the teams (Cascão, 2014).

Strategy and Deployment: always associated to the business chain supported by the diversity and segmentation axes, marketing policies and established criteria, such as geographic distribution network (Kotler, 2014).

Company competitiveness - supported by cost optimization of internal business processes, considering the categories of: (i) Excess stocks; (ii) Rework Operations; (iii) Waiting times; in addition to the budgetary deviations that represented (27.9%) deviations in costs, which is one of the rationalization opportunities.

Implementation of the analysis of quality costs, in four categories: (1) Prevention (35%); (2) Evaluation (25%); (3) Internal failures (30%); and External Failures (10%).

Leadership Behaviour, according to Shook (2010), should be focused on management by example, having all people involved and committed, putting know-how ahead of "think what," instilling principles of continuous improvement, testing before opting for solutions to market problems or needs, building trust in teams and people, developing mutual trust, developing people first and foremost as products, accomplishing all this and dealing with day-to-day functions.

Analysis of the data and results of the management indicators, which according to (Hejazi 2015) were divided into categories: (i) Competitiveness (with changes between 40% and 80%), whether qualitative or quantitative; (ii) Operating, Economic and Financial (with changes between 3.2% and 46.7%).

Conclusion

The initial process of implementing the LEAN management philosophy in the company made it possible to understand that the main objective of this action would be to create, develop and apply a management model adapted and adapted to the organization that should be based on the LEAN system , integrating diverse tools and concepts that would allow it to be present in the vanguard of the current management.

Given the increasing demand of markets, the introduction of new and more demanding customers and the most effective approach in terms of quality.

The strongest penetration in the international area of business, agricultural and transportation units, and of course the gathering of customers in the current business, combined with industry and the automotive markets, also created the need for Galucho to evolve at all levels.

With the implementation of the Galucho Management Model, which at the beginning of the walk, we did not have the idea that we could proceed in this direction, we conclude that the modular and systemic logic allows to verify that:

All organizations, their teams and all people need a defined path to be motivated in pursuit of common goals (Shook, 2010) and (Womack and Jones, 2016).

The key tools or elements for defining common goals is strategy definition through the creation and development of strategic, coherent and participatory maps.

The consolidation of the strategic maps must be carried out in a management system that is the strategic plan, embodied in terms of valuation and rational in the budget and business plans (Kaplan and Norton, 2016).

According to (Grant, 2012) it is fundamental that the strategies supported in the motivation of the people and in the definition and follow-up of objectives, are implemented by appealing to what are called successful strategies through the execution capacity, by the functional areas.

Areas in which the priorities for action are defined, the strategies to be developed, the target areas of action, indicators of progress and objectives, according to Grant (2002), allows the success of the implementations.

Risk Analysis and Initial Diagnosis - the involvement of the most experienced teams in this phase was central to defining the main problems and opportunities for improvement, according to (Shook, 2010), (Womack and Jones, 1996).

The task holders in the various processes are the most knowledgeable of their difficulties, and if they know how to solve it is another issue, for that we had to change.

Project for Change and Organizational Development, was developed and implemented based on the following aspects: Management System - Consolidation and Sustainability (context); Phased implementation methodology, designating pilot areas and then expanding to the entire organization; To advance with the improvement cycles as a way of acting jointly throughout the company, allowing to instill the spirit of continuous and permanent improvement, throughout the entire value chain; Follow-up model - based on the "Balanced Scorecard" tool, and showing the four perspectives of management indicators (financial, customers, internal processes and learning and growth), allowing to raise the level of management performance, integration between areas and improvement of reference values; and Evolution according to the EFQM model, which allows us to measure and follow over time the qualitative and quantitative improvements, as well as the technical and behavioral aspects;

We came here to the Lean Galucho Model (MGG) through the program called "LEAN Transformation", based on the implementation of the PDCA and focused on the triangle base of the action (Purpose, Processes

and People), improving management indicators in values between 25% and 50%, from productivity, material flows and information flows.

We evaluated the LEAN implementation levels according to the LAI (LEI Advancement Initiative) Model, through the six parameters of the defined scale: (1) Involvement of People; (2) Value Creation; (3) Value Chain; (4) Flow of Processes; (5) Notion of "PULL"; (6) Index of Perfection, obtaining (66%) of the level of implementation, considering the scale we will have more (34%), of opportunity for improvement.

The Behavioural Performance was and is being supported in the development of the leadership capacities of all the coordinators and directors of the company and in the management of competences, of the knowledge and the talent of all the people, through actions of Coaching that methodologically based on the cycles of experimentation, training and practice of processes. The "KATA Coaching" improvement cycles, according to Rother (2009), are based on the Production Management System created for the company and on process flow optimization tools.

Leadership - is a topic with treatment and particular importance in this process of transformation and in the case in particular through changes in the shareholder body, the change of generation and especially by the inclusion of the professional management team. In fact, the transition from leadership to most functional and operational teams was also promoted (Quinn, 2009), from the normal state to the ground state, seeking to focus on teamwork, joint coordination and cohesion, focusing on others rather than on themselves, being more client-oriented and flexible rather than internal focus and only in control activities. The leadership approach is considered in a value chain, as a model for the management and follow-up of the evolution of the company's processes, supported by the leadership action plan that concretely acts in the strategic, tactical and operational variants, always managing the creation flows of value: (i) productive; (ii) materials; (iii) information.

Strategy and Unfolding - We believe that the best solution would be to treat the theme under three fundamental points of action and implementation: (1) The business chain, supported by the concepts of diversity and segmentation of markets and Ansoff products in (Kotler, 2014), including a geographical criterion; (2) Competitiveness of the company, through the good management of inventories, costs and waste of activities; (3) Quality, improving Prevention and Evaluation procedures, managing and following internal and external failures, naturally centred on customer complaints and nonconformities of processes.

Management Indicators that allow us to naturally follow the evolution of results and simultaneously stimulate the setting of objectives, indicators of competitiveness, quantitative and qualitative indicators have been developed, as well as operational, economic and financial indicators. We also change here the management position of the company at all levels, considering the contribution of people and areas to the overall results. It reflects the strategy's unfolding, based on its valorisation and follow-up, through the integrated monitoring elements, supported by the Scorecard model (Basu, 2011), and the integration of management tools.

We conclude definitively that modern management systems can adapt to centennial organizations and function in perfect harmony with the experience demonstrated over time, considering that the critical success factors are based on the formation and transformation of leadership styles, and good communication of programs (Mann, 2016).

References

[1]. Abzari K., Mehdi R. Madani P. and Fatemeh T., 2011. *The Effect of Internal Marketing on Organizational Commitment from Market Orientation viewpoint. International Journal of Marketing Studies*, 2-11.

[2]. Basu, R., 2011. Fit Sigma – *A Lean Approach to Building Sustainable Quality Beyond Six Sigma*. John Wiley & Sons ltd, UK.

[3]. "Becoming a Lean-Driven Organization", Industry Directions, Executive Brief, Janeiro de 2005.

[4]. Conferência LEAN Managment, Lisboa, maio de 2009.

[5]. Damodaran online, 2012 and 2013. *Support for Calculation of Financial Data*.Retrieved from: http://pages.stern.nyu.edu/~adamodar/

[6]. Desai, M. and Ferri, F. 2009. *Understanding Economic Value Assed*, Harvard Business School (2) 5-13.

[7]. Flick, U., 2002. *Métodos Qualitativos na Investigação Científica*, Lisbon: Monitor.

[8]. Grant, R. Contemporary Strategy Analysis Text Only9th Edition, library congresso publishing, 2016.

[9]. Herron, C., e Braiden, P.M., "Defining the Foundation of Lean Manufacturing in the context of its origins (Japan)", IEE Manufacturing Engineer, 2007.

[10]. Holweg, M., "The genealogy of Lean production", Elsevier B.V. 2006.

[11]. Lawrence, K. Lenk, P. Quinn, R. 2009. *Behavioral complexity in Leadership: The psychometric properties of a new instrument to measure behavioural repertoire*. Elsevier. The Leadership Quarterly (2) 2-16.

[12]. Machado, V. Cruz, e Pereira, A., "ModellingLean Performance", 2008 IEEE ICMIT.
[13]. Piper, T., 2010-2011. Assessing a Company´s Future Financial Health. Harvard Business School, 12-15.
[14]. Quinn, R., 2000. *Change the World: how ordinary people can achieve extraordinary results* (Jossey – Bass Inc., Publishers).
[15]. Quinn, R., 2004 and 2011. *Building the bridge as you walk on it: a guide for leading change (*John Wiley & Sons, Inc.).
[16]. Quinn, R., 2006. Loex Conference for Instruction Librarians, *Entering the Fundamental State of Leadership, The Changing Role of the User Instruction Librarian*, Retrieved from:www.emich.edu/public/loex/loex2004/quinn.htm.
[17]. Quinn, R., Cameron, K., Degraff, J. &Thakor, A. *Competing Values Leadership, Creating Value in Organizations*, 2006 – Lancaster University, UK.
[18]. Ross, A., e Francis, D., "Lean is not enough", IEE Manufacturing Engineer, Agosto/Setembro de 2003.
[19]. Rother, M., e Shook, J., "Learning to see – Value Stream Mapping to Create Value end Eliminate Muda", Lean Enterprise Institute, 2003.
[20]. Schuh, G., Lenders, Michael, e Hieber, Solveigh, "Lean Innovation: Introducing Value Systems to Product Development", PICMET 2008 Proceedings, 27-31 July, Cape Town, South Africa © 2008 PICMET, IEEE.
[21]. Speitzer, G. & Quinn, R., 2001. *A Company of Leaders*, San Francisco: Jossey Bass.
[22]. Kaplan, R. & Anderson, S. 2007 – *Time Driven Activity Based Costing – A Simpler and More Powerful Path to Higher Profits*, Harvard Business School Publishing Corporation, USA (3) 12-18.
[23]. Kaplan, R. & Norton, D., 2012. *The Execution Premium. Linking Strategy to Operations for Competitive Advantage*. Harvard Business Press.
[24]. Kaplan S., and Aderson S., "Time Driven Activity Based Costing – A Simpler and more powerful path to higher profits", Harvard Business School Press, USA, 2016
[25]. Kracklauer, S., Janssen M., Dorr E., 2010, *Optimizing Business Performance in a Volatile Recovery*. TheHackettGroup 1-10
[26]. Watkins, M., 2007. *Infectious Leadership*, Harvard Business Review, n. 3, October.
[27]. Womack, J., "Moving Beyond the Tool Age", IET Manufacturing Engineer, Fevereiro/Março 2007.
[28]. Yukl, G. 2002. *Leadership in organizations* (Prentice – Hall, Inc.).
[29]. Zammuto, R., Gifford, B., Goodman, Eric A., 2000, A Competing Values Perspective, emAshkanasy, Neal M., Wilderom, Celeste P. M., Peterson, Mark F., 2000. *Handbook of organizational culture and climate (*Sage Publications, Inc.).

Comparison of Methodologies

Project Management	Define	Organize	Implement		Close
DMAIC	Define	Measure	Analize	Improve	Control
PDCA	Plan	Do		Check	Act

[Table 1] Methodologies

Use of the improvement cycle DMAIC

Define	Measure	Analize	Improve	Control
Reason for projectrealization	How can we measure the current moment	Deviations and obstacles and cause of problems	Actions to be implemented to correct and improve	Results, risks and progress report

[Table 2] DMAIC

Tools in each phase of the DMAIC

Define	Measure	Analize	Improve	Control
Description of processes in phases	Graphs and charts with indicator values	SWOT Analysis Five Whys? Paretto and ABC analysis	5S SETUP Reductions and Non-Productive Time	GANTT PDCA Control maps of Action Plan

[Table 3] Lean Management Tools

"Balanced Scorecard"

Perspective	Key Performance Indicators
Financial	Cash Flow; EBITDA; Management Fund
Customers	Sales; Relative Quota; Competition; Margins; Complaints and NPS (Net Promoter Score)
Internal processes	Stocks; Capacity; Efficiency; NPT; Unconformities
LearningandGrowth	New products; Knowledge; Formation; Absenteeism; Environment and Safety; New Markets and Customers; Information systems

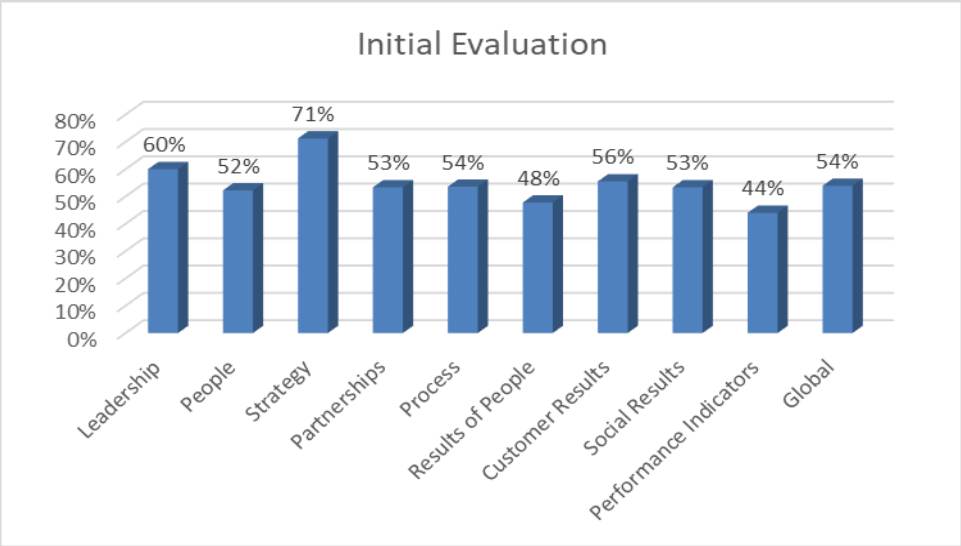
[Table 4] Follow-up Model

In **[Chart 1]** we show the weights for each of the elements of the model:

Model area	Element	Weight%
Means	Leadership	10%
	People	9%
	Politics and Strategy	8%
	Partnerships and Resources	9%
	Processes	14%
Results	Results of People	9%
	Customer results	20%
	Social Results	6%
	Performance indicators	15%

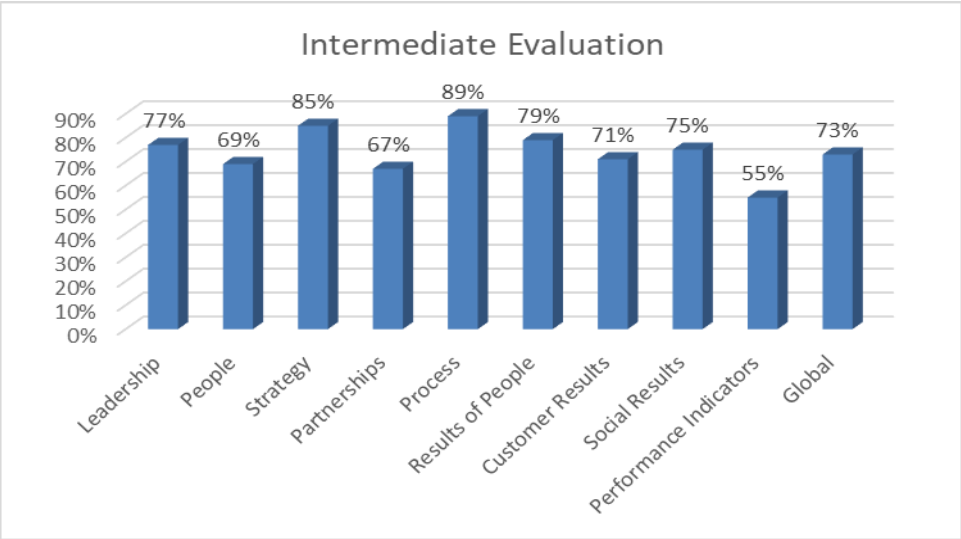
[Chart 1] Weights EFQM

According to the table and with the appraisal applied to the executive management of the company, the results are as follow:



[Chart 2] EFQM Initial Evaluation

In [Chart 3] we present the results, which we consider to be intermediate for the current management cycle, considering that the end of the observation would be as follow:



[Chart 3] Interim evaluation of the Model

Model LEAN Galucho

Purpose Mission CustomerValue Goals	**People** Culture Learning Leadership
PDCA Problem-solving Cadence of Work LeadershipInvolvement	**Processes** 5S Standard Time Production Flow Visual management

[Table 5] Representation of the Conceptual Model

Development LEAN - Galucho

Purpose **Improve Efficiency** **Improve quality and safety at work rates** **Reduce costs** **Objectives of the strategic plan and activities**	**People** **Leadership** **Formation** **Communication**
PDCA Troubleshooting Cadencia de Trabalho Leadership Involvement	**Processes** **5S** **Standard Times** **Flows** **Visual management**

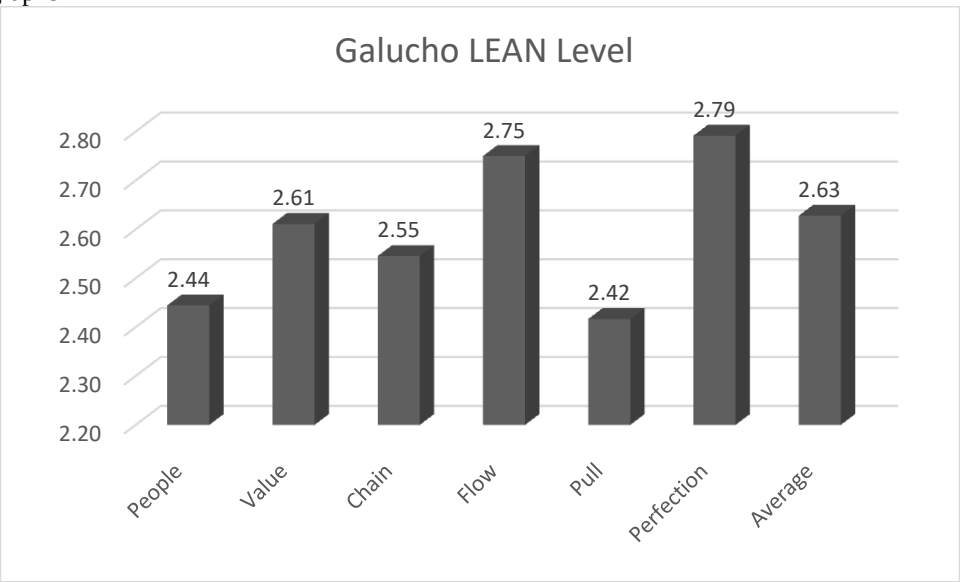
[Table 6] Model Applied

In practice and in numbers

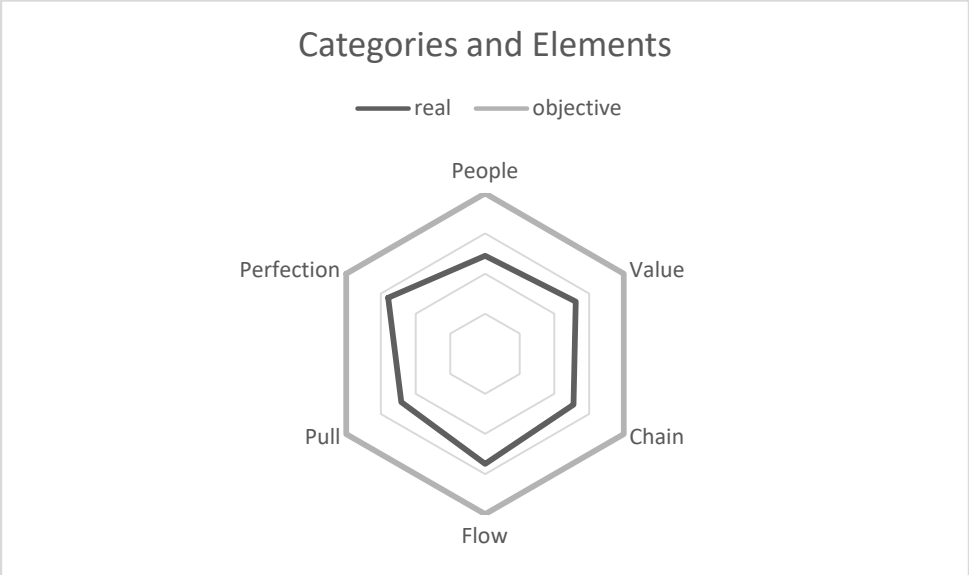
All lined up to keep	**First round improvement**
Better internal instructions between areas	35%
Improve reaction to error correction	25%
Doing good first by reducing unplanned operations	30%
Improve supplier selection	25%
Much greater attention to customers to avoid hassles and unnecessary rework	50%

[Chart 4] ImprovementIndices

In the case of Galucho we present an average score of 2.63, distributed by the six factors according to the following graphs



[Chart 5] Global Assessment



[Table 7] Against the objective

Flow Time

Value	**Waste**
Provider	**Inventory**
Developing products	**Rework**
Production	**Wait**
Client	

[Table 8] Flow

OrganizationofOperations

Factories	**Base. Processes**	**TaktTime %**	**People Production**
(1) PartsandComponents	Cutting, forging, CNC, shafts and cylinders	38,74%	79
(2) ManufacturingandAssembly(SJ)	Bending, Assembling and Robotics, Final Assembly, Stripping and Painting	54,45%	111
(3) ManufacturingandAssembly(A)	Bending, Assembling and Robotics, Final Assembly, Stripping and Painting	6,81%	19

[Chart 6]Base ProductiveFlow

Locationof Stocks

Typology	**Raw material (Warehouse)**	**IntermediateWarehouses**	**Shipping (Warehouse)**	**ProductionSections**
Raw Material	33%			
FinishedGoods			25%	
Work in Progress		19%		23%

[Chart 7]Analysisofinventories

FromOrder to CustomerReceipt
(Base Processes)

Markets Customers Marketing Engineering	MarketStudiesandProjects	Sales Plans	Offers	Price Negotiation	Orders
Management of Business	Sales Plan	ProductionPlan	TrackingandCorrection	DeliveryPlan	Shipping
Planand Production Control	CapacityStudies	FactoryOrders	Control of Real VS Plans	Sales Plans	Deliveryandquality documents
Shipping to Customers	Packinglist	Invoices	Destination and means of payment	TechnicalandQuality Documents	ReceiptandDocuments

[Table 9]InformationFlow

Businesses Chain

Markets	Ibéria	Algerie	Balcans	France	African
Distribution	49%	26%	4,8%	9,5%	10,7%

[Chart 8]Diversidade de Mercados

ProcessCosts

Waste	Costlevel
ExcessInventory	20,9%
Reworkoperations	23,2%
Waiting time	28%

[Chart 9]Cost Analises

QualityCosts

Categories	Costs in percentage
Prevention	35%
Evaluation	25%
InternalFailures	30%
ExternalFaults	10%

[Chart 10]CostReport

CompetitivenessIndicators

KPI	Value
Cost savings on process flows	45%
Reduction of product and project development times	60%
Increased Engineering capacity - charge new projects	40%
Improved Customer Satisfaction - NPS - Net Promoter Score	80%

[Chart 11]Evolution

StrategicKPI´s

KPI	Value
Stock Turnover	3,2%
Working Capital	4,65%
EBITlevel	15,6%
Net Cash Flow	46,7%

[Chart 12]Evolution

Operational effect on Macro indicators

Strategic KPI	Operationaleffect
Stock Turnover	Inventoryreduction
Working Capital	StocksandCollection
CustomerSatisfaction	CustomerComplains
EBITLevel	OEE
Net Cash Flow	Sales improvement, Investments and cost management

[Table 10]LowLevelIntegration

