

AIMING THE LEAN ENTERPRISE THE "PLANO 100" CASE

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Summary

Based on the model proposed by Womack and Jones in their book "Lean Thinking" (1996), this work discusses the strategy for developing and introducing a product in the market based on real state destined to medium class, developed by the company Rossi Residencial, under de commercial name of "*Plano 100*".

In this case, the company clearly intends to involve all ||| elements of the productive chain with the objective of reaching the best results, so that the products that attract clients due to their quality and low costs are viable, as well as the operational activities both of the company and its professional team and of its main suppliers/partners in relation to materials and services supplying.

INTRODUCTION

Womack and Jones in their book "Lean Thinking" (1996) defend the idea that after ten years dedicated to activities related to re engineering and downsizing, the companies are searching for a way to get success and sustained growth.

According to the authors, the problem is that the companies lost the correct sense of what *Value* is to the client and how it can be created. A bad definition of *Value* generates waste and inhibits growth.

It is necessary that a new approach is adopted, which:

- clearly specifies the concept of *Value*;
- identify the activities that effectively create this *Value*, thus making a *Chain of Value*;
- provides the continuous running of the processes flow;
- permits an approach in which the client "pulls" the company;
- searches for perfection in all tasks.

The consequence of the application of this model, named "Lean Thinking", is the appearance of the "Lean Enterprise", the next step in the search of "Best Practices".

The present case shows a company that realigned its model of action based on its market characteristics and developed management tools and techniques that sustain this philosophy and guarantee the continuity of its activities in a competitive form in the years.

"Plano 100" A brief history

Until the end of the 80's, the residences destined to medium and low classes in Brazil were financed by the Government, based on amortization of about 15 years and low interests. The resources for these financing came from the savings generated by the population and from a percentage of the total mass of salaries, collected by the companies and charged in their respective pay roll.

Due to several operational and strategic problems, this type of financing became unfeasible resulting in a great loss of liquidity of the real state already constructed and making impracticable the new enterprises which, in practice, resulted in a paralyzed market.

In 1991, based on a market research appointing to a great demand for medium class real state, Rossi Residencial, a company dedicated to the construction of residential buildings, started an effort based on the real needs and limitations of the possible clients of this type of product.

After 18 months of work, the first enterprise was launched, comprising eight buildings with 256 three room apartments, which was completely sold within a week.

With the success of this strategy, new enterprises were launched, and the situation came in which in 1992 the company was responsible for 47% of the residential units commercialized in Sao Paulo, the biggest city in the Country.

At first, the reason for the success of this product was the innovative way of financing the client, consisting of 100 fixed monthly payments, which should be paid within 80 months.

In this model, the participation of commercial institutions as financing agents was excluded, contributing to reduce the contractual financial expenses, resulting in lower and more attractive prices. On the other hand, the rhythm of the construction was dictated by the sales speed, increasing the term for transferring the residential units commercialized.

Due to the success of this new form of commercialization, other construction companies began to use similar models and the company started to develop and improve its management and research tools, until the "Plano 100" was defined, including the client satisfaction based on its real needs and capacities, and technical differentiation in the executive processes, starting from the elaboration of projects and partnership with the main materials and services suppliers until the execution of each activity.

The practical result of this effort was the gain of 25% of the market of residential units commercialized in Sao Paulo in 1996, with the total of 3.000 apartments already delivered and 11.000 apartments being constructed to be transferred within 4 years. The company is operating in 10 different cities and has developed franchising in 10 other cities. A judicious buyers selection process guarantees a factor lower than 2% of breaching of contract and client satisfaction index of approximately 85%. Its trademark is known by 67% of its target public and 25% of its sales are made through indication by clients, being that the sales speed is three times the other enterprises of the same level.

These figures can be explained by the systemic approach adopted in the conception and implementation of this model, which includes focus in the client in the same intensity as the search for rationalization of its productive processes, promoting technological development for the company and its main partners.

TECHNICAL APPROACH

Based on standardized projects and finishing materials, the company focus its action in the site, aiming an organizational culture that guarantees the same level of finishing in each enterprise executed.

Concepts of Simultaneous Engineering and the development of small solutions that optimize the job execution have resulted in significant immediate productivity gains for “Plano 100”. For instance:

- using metal frames, the concrete structure of the building can be executed with the accuracy of millimeters (premanufactured or metal structures are not used in these buildings), saving part of wood expenses for this service;
- optimization of wall dimensioning has permitted greater agility and quality when executing the jobs, besides a significant reduction of material losses in this process;
- the use of ergonomic concepts has permitted productivity gains of up to 200% in several site operations;
- logistic concepts provided optimized lay outs, considerably reducing the expenses and efforts in moving and transporting materials;
- the helpers began to constitute a group for logistic support instead of acting directly executing the jobs, being basically responsible for guaranteeing the continuous work in each job front;
- partnership with the main suppliers has permitted that joint researches were made, resulting in new techniques, tools and modifications in the executive processes. The partners often organize training to the production workers aiming the correct use of their products. It should be noted that 88% of the materials used are bought from partners;
- the concept of horizontal and vertical shafts is used, making the plumbing installation easier;
- due to the difficulties presented by the production teams in reading the drawings, the projects were adapted to an easiest visual language which is readily understood. Colors and signs are often used in job drawings and tools. With this simplification, the average time for elaborating projects has decreased from 5 to 3 months and the production teams began to loose less time for understanding projects, thus reducing the chance of interpretation errors;
- the operational procedures are standardized and discussed with the production teams to guarantee that the persons involved know what is really expected as the final result of the job. Each job can only began when the responsible for its execution is certain that all materials, tools and equipment necessary to the job are available in the site;
- the jobs are evaluated daily in relation to term, costs and quality, so as to guarantee that eventual deviations to the proposed plan are immediately detected and attacked;

BEHAVIORAL APPROACH

With the objective of making the management strategies of “*Plano 100*” viable, it is of fundamental importance to guarantee the knowledge and compromising of the production teams in relation to the global objectives. It should be said that in Brazil the constructions are executed with low industrialization level, being that the labor expenses can reach 30% to 40% of the global costs of an enterprise.

In this scenery, “*Plano 100*” has based its actions in the following goals:

- the responsible for assimilating new knowledge and transmitting to the team is the foremen, which are continuously trained in relation to new execution techniques and also in relation to the tools for observe the construction in relation to term, costs and quality. This training includes leadership and communication techniques. The foremen are also responsible for elaborating the executive estimations, contributing with his previous experiences to reduce stocks, define teams, improve productivity among others;
- the site engineer is responsible for guaranteeing the economic financial success of the enterprise, through the management of the technical and operational resources available, directing the site operations and appointing deviations in relation to what is expected;
- . the team is rewarded in the basis of three factors: period of time worked, productivity of the team and quality for executing the job. Thus, if a team worked for a month and executed the job within the expected time, it can only have an increased reward if it reaches at least an expected service quality which is defined in common by the site engineer and the team. The supplementing value to be paid to the team is calculated considering the non quality cost for this job. Thus, if the expected average for the job is 4 (grades of 0 to 5), and the team reach a grade 4, the worker receives 25% of the estimated non quality cost for this job. In the case the grade is 5, he receives 50% of this cost added to his wage.
- a Continuous Improvement Plan was implemented, providing the involvement of the engineer, foremen, support team and leaders of production teams, which join once a week to discuss the results and new forms of improvement to be adopted.
- the grade given to each service is based on a series of parameters, evaluated for each phase of the execution. Based on these evaluation grades, it is possible to determine the needs for technical training of the teams and thus obtain job improvements based on daily learning.

In the context of improving the capacity levels and compromising the teams in the site, “*Plano 100*” aimed the implementation of a series of procedures to improve life quality in the work environment and to systematically reduce turnover:

- free medical and dental services are provided in the sites;
- after a year and a half, the company offers round trip tickets so that the workers can visit their families during vacations, knowing that the company expects them to return to continue their work. By their return, the company advances 20% of the monthly wage so that they can work without financial worries;

- formal safety procedures exist in the work environment, so that individual and collective protection equipment are available to the work teams;
- the accommodations of the work teams have common room equipped with TV and video cassette, and high hygiene standards are adopted;
- the site workers have 200 h of classes so that they can read and write, in a first moment, and learn new techniques and tools;
- the workers receive training to get information on disease prevention such as AIDS, alcohol, drugs, among others;

The direct consequence of this effort is represented by a turnover of 4%, while the construction market average is of approximately 12% to 15%. Besides representing costs reduction, it permits the company to keep a high performance standard team in the years.

SITE MANAGEMENT

The basic strategy of "Plano 100" is to decentralize the management process through the control of terms, costs and quality of each job. In this sense, the company has developed information systems that sustain the decision making process in each hierarchic level, as the system for observing the quality of the jobs, named "Statistics of the Productive Process", which permits the daily monitoring of each job, attributing grades to evaluation criteria and comparing the grades obtained by other similar job fronts either within the same site or other sites of the company.

With the use of these tools, it is possible to define which are the "excellence islands" for each service in the company and thus to prepare general programs for team training, which are often offered in the sites.

The resulting agility in identifying deviations in relation to the plans permits the foremen to re program the activities to be executed on a weekly basis and considering the costs obtained in the previous steps or even the necessary term for the job to be executed.

The practical results obtained with these tools can be observed through the following data:

- decrease of 35% in the initial cost of the project from 1992 until today;
- material losses were reduced to low indexes, such as 1.5% in the case of masonry;
- productivity of 1 m² of wall per worker per hour has increased to 2.7 m²/hour;
- while the national average indicates that 30% of the time available to work is productive, in the case of "Plano 100" it reaches 45%.

CONCLUSION

It can be observed that in the case of "*Plano 100*", basic concepts for "Lean Construction" such as Value Analysis, Focus in the Client, Simultaneous Engineering, Comakership, Systems for Information and Decision Support, and Programs for Capacity and Compromising of Team Works were used in an integrated way trying to make not only the

management process viable, but also a Product outlining composed by a consistent methodology for commercialization, designs, negotiation with suppliers and execution of jobs.

Nevertheless the good results observed, there's a lot of work to do. The "Plano 100" team's next step looks for to achieve consistency to the information flow and site management tools. The chief foreman active participation in all decisions related with project's budget, time and quality is one of the strongest points in this model, and it needs to be applied with others middle managers in the main office.

The "Plano 100" approach looks for not only the systematic reduction of losses but also to create an environment directed to the learning, in which the immediate feedback helps to transform waste in *Value*, thus contributing for the company to reach high degrees of efficacy and efficiency, making its sustained growth viable in the years, in a market of intense competition.