

# APPLICATION OF A METHODOLOGY OF STRATEGIC PLANNING IN COMPANY OF TECHNOLOGICAL BASE

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**Abstract** - This paper has the its main goal the application of the methodology of strategic planning to the technological enterprise located in São Carlos, S. P., Brazil. This methodology intends to evaluate the opportunities and the threats to the external environment and the weak and strong points of the internal one. With the organization of all this information it possible to get an enterprise strategical position which will help on with the possible decision of the enterprise goes the improvement of the competitiveness.

**Key words:** strategic planning, strategic enterprise and strategic decision.

## Introduction

The present article researched a company of technological base placed in the technological Pole of São Carlos and it has with main objective to analyze which the strategic positioning of the company, as well as the aspects of the market atmosphere and internal conditions of the company, through the application of a methodology of strategic planning developed by BATALHA (1997).

The technological pole of São Carlos appeared in function of the development of researches in the universities (USP and UFSCar) and of the center of research of Embrapa (Brazilian Company of Agricultural Researches). Its constitution was configured when these researches overcame the physical limits of the laboratories, appearing small companies of technological base, that today compound the technological Pole of São Carlos, now called as Capital of the Technology. The Technological Pole, that it shelters the researched company, it is placed inside of an industrial park, that also gave it support in its origins TORKOMIAN (1993).

Today it is growing the use of the strategic planning (S.P.) in function of the uncertainties of the concourse environment. FISCHMANN & ALMEIDA (1991) show out that only the administrators have been trying lately to develop techniques to facilitate the work of driving the organization in the best direction. According to these authors S.P. is a technique that, through the analysis of its atmosphere, creates conscience of its opportunities and menaces of its strong and weak points for the execution of its mission and, through this conscience, it establishes the direction purpose that the organization should proceed to take advantage of the opportunities and to avoid risks. S.P. seeks the effectiveness of the managerial activities,

that is to say to guide the efforts in the best possible direction, mainly in technological base companies, emphases of the article, where the changes as much techniques as organizations are of dynamic nature. This way it intends to approach through a methodology of S.P. the main intrinsic aspects in the environment concourse (strategy of market) and aspects intern and organizational (strategy of manufacture) in a company of technological base. For this the article was divided in the following level:

- Conceptual data
- Used methodology
- Description of the company;
- Application of the methodology;
- Analysis and conclusions;
- References.

## Conceptual data

ALVES (1991) it places that the formulation and implementation of a technological strategy, include from the study of the environment and of the internal conditions of the company, to the determination of directions and objectives and also the activities that will be developed for the amplification of the technological capacity for the improving of technical changes. One of the first empiric researches that related the technology with the activities organizations was sociologist Joan Woodward's, in 1958 in England, in which took the conclusions that the technology influences strongly the structure and the behavior organizational. The author characterized this fact of "technological imperative", that conditions the structure and the behavior of the companies. In compensation the Group of Aston - English researchers' group - they showed that the size of the company constitutes the most important determinant of the effect of the technology on the organizational structure. This way we can consider that the influence of the technology is powerful, but it is not decisive.

FISCHIMANN & ALMEIDA (1991) when analyzing the subjects linked to the S.P. they mention three levels involved in the managerial decisions:

- Tactical planning - it is a planning of short period, embracing administrative decisions and operations and seeking the efficiency of the organization.
- Long term planning - it is the amplification of the tactical planning for a longer period, without earring variations of the environment and of direction of the company.
- Strategic administration - it is a process of qualifying the organization of integrating the administrative and operational decisions with to the strategic ones, trying to give efficiency and effectiveness at the same time to the organization.

PIRES (1995) when referring to the strategies of manufacture says that all the decisions inside of the company has strategic implications, this means to erase or to minimize, the effects of the imaginary line that it would separate the decisions of the company in strategic, tactics and operational. The Strategy of Manufacture is part of the calls Functional Strategies of a unit of Business. The main objective of the Functional Strategy is to support and to make possible the Strategy of the Unit of Business, through Structural and Infra-structural resources as we can see in the figure -1.

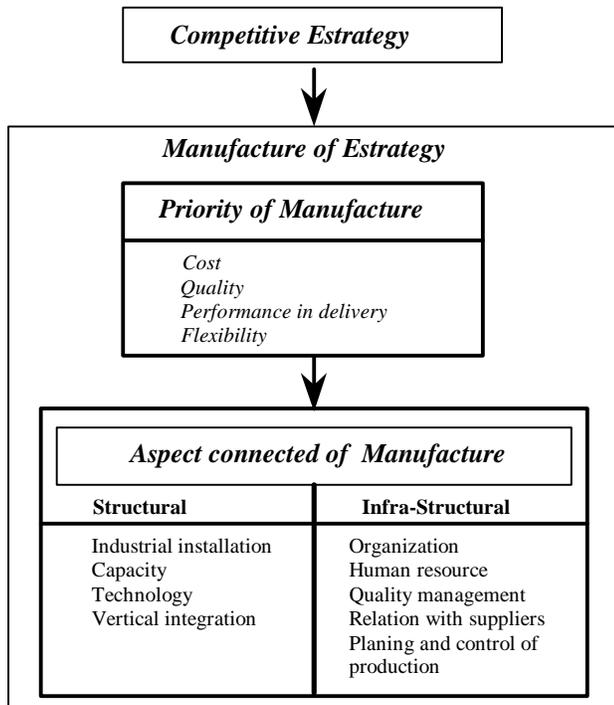


Figure 1. Content of a Strategy of Manufacture - PIRES (1995)

GIANESI (1988) it show “the operational decisions (infra-structural) also define the behavior of the company, being, therefore, necessary to integrate them the defined strategy.”

### Used methodology

DJALMA (1989) defines strategic planning as a process developed for reach a wanted situation in a more efficient and effective way, with the concentration of efforts and resources for the company.

For accomplishment of this analysis a methodology of strategic planning developed by BATALHA (1997) who understands the following stages, show in the figure 2.

**1 - sensibilization** - it is the first stage of the strategic planning, that consists of the manager's sensibilization, as the need of the application of this methodology and as a way of structuring the actions of the company. This methodology requests the accompaniment of the management in all the stages, otherwise, the success of this tool can be beyond of its real benefits.

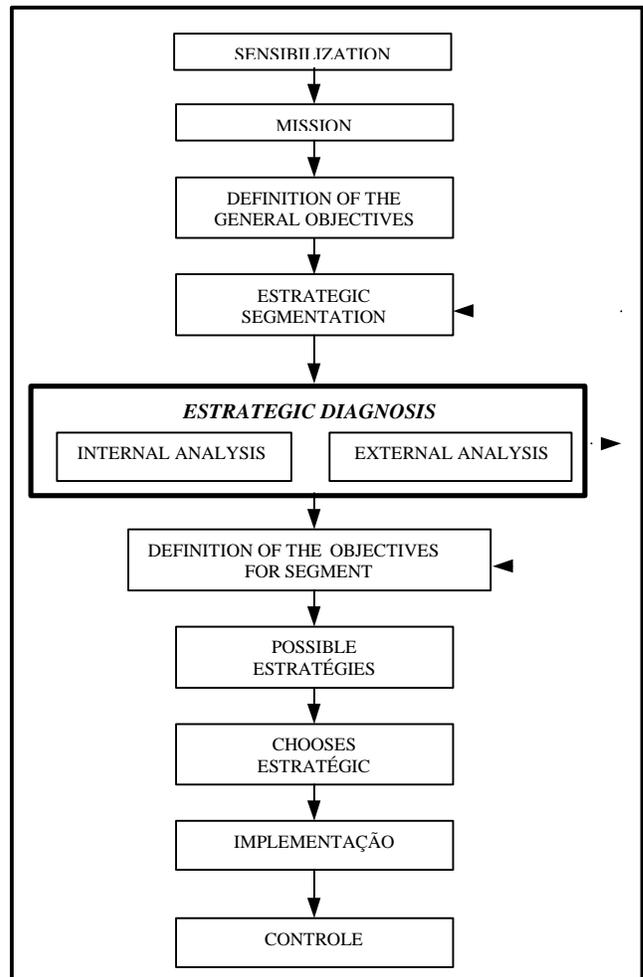


Figure. 2. Methodology of Strategic Planning (BATALHA 1997)

**2 - mission** - The objective of this stage is to define the managerial action and to legitimate its function front the society. Through the definition of the mission, it's trie to identify, which the reason of being of the company and the activities that the same should concentrate on the future.

**3 - definition of the general objectives** - In this third stage the company defines the objectives reached through its operations. It's easy to make mistakes between objectives and strategy; objectives are the means to reach an objective. The importance of settling down the objectives is that aids in the taking of decisions, it supplies patterns for performance measures and the objectives can be easily transformed in action forms than the mission of the company.

**4 - strategic segmentation** - it is a process of dividing product/market in groups of similar characteristics. The segmentation can be made through several approaches, such as; technology, the buyer's profile, geographical location, positions social, economical and others. The objectives of the segmentation are; evaluation of the performance of the company at a level of details bigger than the group of the company, allocation of resources of the different units of the company, identification of the competitors in each segment, identification of new segments the company can act.

**5 - strategic diagnosis** - This stage can be divided in two phases: analysis interns and external analysis, which will be described below;

**5.1 - Analysis interns** - it tries to approach the weak and strong points (threats/opportunities) company, competitive direct or in potential companies.

This analysis can be made through a checklist of all the areas of the company

(human resources, organization, finances, researches and development, production and marketing) facilitate to trace a strategic profile and to place the company in the market in relation to its competitors.

**5.2 - External analysis** - has for purpose to study the relationship between company and its environment in terms of opportunities and menaces, as well as the current position of its products and the markets in what it acts. There are several factors that can affect the strategy of the companies, some of them are: economic, social, technological, government and others.

Some means get up-to-date of capturing information are indispensable to make in the market concourse, such as: participation of industrial fairs, newspapers, magazines, external observer and other observers, these information can supply future scenarios of the fields of performance of the company.

Some tools that can aid in this stage, they are them:

**5.2.1 - Analysis of the productive chain** - it represents a sequence of transformation operations, you dissociated to each other, chained technically and responsible for the production of a good or a group of goods.

**5.2.2 - Paradigm of the Structure-conduct-acting (S-C-A)** this tool turns possible the description of the organization of a

market, being based in its base conditions, and of empiric aspects of the structure, conduct and acting of the firms.

**5.2.3 - model of the five forces of PORTER (1991)** - it has for purpose to place the company and aid in possible strategic decisions, basing on five market forces; power of bargain of the supplier, power of the customer's bargain, possibility new competitors, competition of the section and products substitutes.

The last two mentioned tool is more indicated for the analysis of one of the economic sections involved in the productive chain of a certain product.

**6 - definition of the objectives for segment** - this phase consists of quantifying the general objectives of the company. They are given quantitative data that the company intends to reach in a pre-certain period.

**7 - possible strategies** - in this phase it is necessary to do an analysis of the possible applied strategies, already considering the aspects established in the previous phases, some of them are:

**7.1 - generic strategies of PORTER (1991):**

- differentiation (it focuses for the demands of the market);
- Focus (concentration for an or two market segments);
- Dominance for the costs (it focuses for the product).

**7.2 - cycle of life of the products** it's another used tool - that allows an analysis of the costs and profits of the products along theirs lives. The main benefit is that facilitates the planning of new products in detriment to the products in decadence in the market.

**7.3 - main BCG** it's other tools that can aid in this phase, head office of growth vector, vertical and horizontal integration, innovations, diversification and another.

**8 - chooses strategic** - at is phase owning several possible strategies, it should be selected the most appropriate the reality and the needs of the company. The viability of the strategies can be analyzed through a meticulous study basing on some data, such as: possible investments, working capital, contribution margin, projection of sales, analysis of costs and others.

**9 - implementation** - it consists of placing in practice, through the action plans, the strategies that were established. The action plans translate the strategies in operational actions, articulated around the objectives, and the strategic actions are constituted of projects distributed along the time, where these represent the link way to strategic decisions with the budget economic financier of the company.

**10 - evaluation and control** - This is the phase which the company makes an analysis, if the decisions takings in the previous phases reached the pre-certain results. This last stage allows identifying problems and existent flaws allowing the taking of right decisions. This evaluation should be made annually or semestrally, depending on the company, in function of the several aspects that influence in the managerial atmosphere. A used tool is the analysis of the tied acting the comparable idea, this analysis origin of the accounting and costing systems. It is important to stand out that the stages of the methodology don't follow a rigid sequence, in the measure

that one influences the other in its development. This way the evaluation and the control are shown as an important analysis tool and understanding of the data.

### **Description of the company**

Engemasa Engineering of Materials, is one of the main companies of the private section, which acts in several market segments: melted of inoxidable steels and power league, bars forged in inoxidable steel, metallic fibers, swab of welds base cobalt, nickel, chromium, serpentines and columns for pyrolysis ovens and cracking, tubes centrifuged in inoxidable steels and power league, reverse engineering in equipment's and maintenance in general and light machine-made and weighed for third. These products act in several sections of activities, such as: petroliferous, chemical and petroquimical, construction of ships, concrete, mining, paper and cellulose, sugar factory and alcohol, fertilizers, nutritious and mechanics.

The embryo of the company appeared firstly inside in 1975 of the department of Engineering of Materials of UFSCar (Federal University of São Carlos), where a pilot foundry was set up in the wish of aiding students in the learning of the foundry process and also to supply technical support the companies of the area of São Carlos. In 1976 for political aspects this group of researchers if dissociate of the University and together with a group of managers of the area they created Engemasa, the first company of the Technological pole of São Carlos, subsidized with loans of the National Bank of Economic Development (BNDES). Now Engemasa is characterized by a company of medium load, with a total of 176 employees involved in its activities. Its revenue rotates around \$12.000.000/ano.

### **Application of the methodology**

The collection of data was made starting from two sources of information: interviews with the director-superintendent of the company and through technical visits. These informations are structured below in the methodology.

The mission of Engemasa is "to produce pieces melted in inoxidable steels and you call special lieges with quality and with international price to continue surviving in a global market."

The objective in medium and long period is the transformation of the company of a foundry Job foundry (foundry for others) for a foundry that works the product until the end. Some activities of the company were decentralize, such as, restaurant and transport. According to GIOSA (1997) the decentralize bases on a strategic boarding, provoking structural changes systemic and it has as main objective the development of its main activity. This way the company its focalize activities in melted steels looking for market niches in that the international companies don't reach because they are not niches so big that it interests the great groups, even so they are niches of high profitability. The advantage that Engemasa has front to

these great companies is the agility and the flexibility to the attendance to the customer.

The market segments that the company operates are of the most varied types, such as: petroliferous, chemical and petroquímico, construction of ships, concrete, mining, paper and cellulose, usinas of alcohol, fertilizers, nutritious and mechanics and others. The products are 50% exported for France, Germany, USA, Canada, Argentina, Finland and other the remaining of the production stays in the internal market.

The export of these products guarantees the production stability, in spite of the profitability to be smaller. This market inclusion becomes an advantage for the company, because when some sections are in drop, others are in high. COUTINHO (1995) affirms that the centralization of the capital in groups multisetoriais with strong presence of industries leaders in growth and in technological innovation are characteristic of a competitive managerial system. In the figure - 3 we can see the strategic segmentation of the company that is diversified by the sections in that acts.

The next stage of the strategic planning is the strategic diagnosis that is composed by two phases, the internal analysis and external analysis, which has for purpose to identify menaces and opportunities as internal as external the company. These two phases are described below:

*External analysis:* One of the problems identified by the director-superintendent calls Cost Brazil, that turns the cost of the highest products providing competitive disadvantages in a market of global competition. For Engemasa this fact becomes more important for being a company of technological base where the technical changes and of processing of the product, besides they demand high investments they are of dynamic nature

The economic instability turns the planning of the most complex production because a demand doesn't exist relatively constant of the consuming market. Companies of countries as France already drifts the year 2000 for the stability of its markets. Engemasa drifts the following month, mainly for the economic instability that attenuates the productive activity of the Brazilian companies.

A tool used to understand the strategic positioning of the company is the Model of the Five Forces of PORTER(1991). These five forces are:

- Power of negotiation of the vendors;
- Power of the customers' negotiation;
- New competitive;
- Competitive of the section;
- Products substitutes.

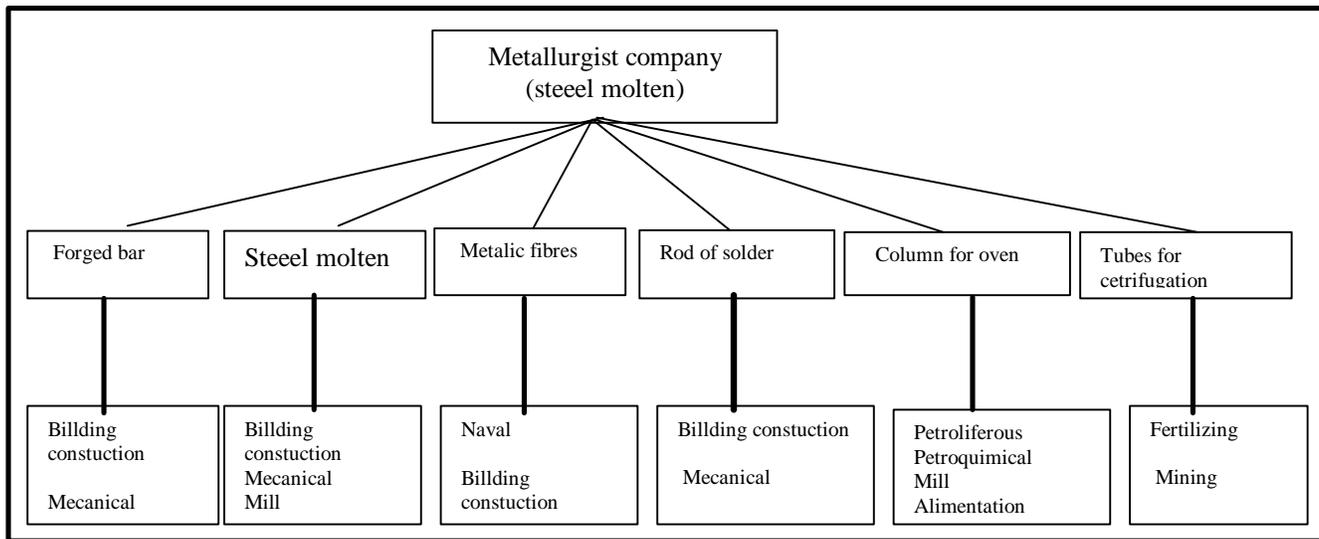


Figure 3. - Strategic segmentation of the company

The negotiation between vendors and customers can be understood as a process in chain, which the customer requests, the company presses the chain of vendors and vice it turns. Now the stability of the coin guarantees the stability of price of the products.

In function of the fast technological evolution, the company constantly participates of international fairs as a form of maintainly modernized in the external market, besides the direct contact with universities of the area of São Carlos and of Brazil. This guarantees previsibility in a certain way as the entrance of new competitive. Today the company has emergent China with products of good quality, but in its compensation wages, they are inferior if compared the international competition. India, Indonesia and the Asian Tigers behave in the same way and they are already making competition in the international market, it is believed that to medium period they will become competitive in potential. SEGRE & MARTINS(1996) believe that with the new context of the international competition the comparative advantages based on hand of cheap work and matter excels abundant they stop being a referential of competitiveness.

The researches in the search of new materials (products substitutes) they become a menace for the company, today in the place of the melted iron ceramic and materials composed

of fibers that are occupying place in the market exist, nylon bombs and teflon already exist for special processes. Japan already went back again to the metallic leagues, because the ceramic leagues were shown extremely faces, the production process is of high deterioration of the equipments and of maintenance, it demands a high investment

Among the national competitors Engemasa leads in quality, it was rewarded as being the best Brazilian foundry of the section. Its main competitors are Vilares, Fundinox; Eden attains in the internal market. A fundamental point is the massive investment in technology, through of the department of DTEE, where 2,5% of the revenue liquid are invested in new programs, wants it is the improvement of the process, the improvement of the product. The table 1 summarizes the main points observed in the analysis of the external environment.

*Analysis interns*; in the internal analysis it is made a checklist of the areas of the company through this analysis it is possible to trace a strategic profile of the company. A lot of times the strategic options focused by the companies just shimmer market aspects and external to the same, disrespecting internal aspects, which can represent menaces or opportunities inside of an competitive ambient

Table - 1 analysis of the external environment.

| <i>MENACES</i>                   | <i>OPPORTUNITIES</i>                                 |
|----------------------------------|--|
| • Technological down-to-date     | • Development of new products                        |
| • Speed of technological changes | • Development of new markets                         |
| • Products substitutes           | • Net of products starting from a technological base |
| • Disloyal competition           | • Attendance to the customers                        |
| • Cost Brazil                    | • Flexibility  |
| • Economic instability           | • Technological investments                          |

Engemasa possesses a research department and development in engineering and strategy that plans the future actions of the company (10 years) and they are responsible for the development of new materials, politics of human resources and improvements in the productive process.

A constant concern exists with the human resources of the company. These politics are going from the existence of plans of health, training (technician), education (first and second degree), besides the program of participation of the profits, that contemplates in the motivation for the work. Some indexes reflect this concern with the human resources of the company, such as: the turn-over of the company is very low, the employees' rotativity is low, many already completed 10 years of company. According to the Director-superintendent, to invest in the people is the form of guaranteeing that the changes organizations happens reinforced by the technological apparatus, it is the form of facing the technological challenges facilitating the adaptation of the company to the changes dictated by the world competitiveness.

A problem told internal organizations is the succession plan, which cannot to come as a menace the current administration of the company. The table 2 summarizes the main points observed in the

Table - 2 analysis of the internal environment

| <i>WEAK POINTS</i>              | <i>STRONG POINTS</i>           |
|---------------------------------|--------------------------------|
| • Succession process            | • Quality of the products      |
| • Centralization of power       | • Flexibility of the work hand |
| • Cash flow                     | • Research potential           |
| • Programming of the production | • Low abstention level         |
| • Marketing                     | • participation management     |
|                                 | • Support of human resources   |
|                                 | • Low rotation level           |

The definition of the objectives for segment, for being a quantitative analysis, depends of a lot on the reality of each productive process, which would escape from the objective of this article.

For the establishment of the possible strategies the generic strategies of PORTER were used (differentiation, focalization, dominance for the costs) it is ended that the company operates with the differentiation of its products, focusing its activities for the demands of the market.

ANSOFF (1977) it created a tool for analysis of markets and products of the companies call Main Vector of Growth, as we can see in the figure 4.

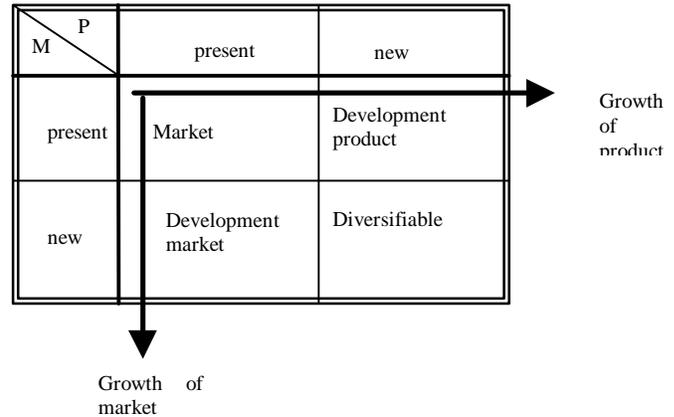


Figure 4. - Main Vector of Growth

Basing on this head office can identify, market synergy (development of new markets) and product synergy (development of new products). A characteristic that reinforces this positioning is that the production works for projects, allowing flexibility so much of product as of market.

The realization of a strategic choice is made through an analysis of costing of whole the production process arriving this way at the final cost, where it will be resolved which plans of actions) that has to be established (implementation and control). Of each product profitability from 10 to 13% is specified.

The most important decisions in the last tree years was they very agile answer of the adaptation of the company the market demand and a larger marketing aggressiveness. For this, the new investment is indispensable in the process of technological adaptation

## Conclusions

Through the application of the methodology proposal, it can be observed that the technology was shown as a preponderant factor in the strategic decisions of the company, justifying the existence of the “technological imperative” of sociologist JOAN WOODWARD, mentioned in the topic 2 of this article.

The company shows a high research level and development (P&D), that guarantees technological progresses and the differentiation of the politics of human resources, that now are very distant of most of the medium Brazilian companies COUTINHO (1994). This author affirms that the relationship University-company was always a weak point of the Brazilian industrial politics. In the researched company the opposite is verified, where this relationship is direct and consistent, what helps to maintain the technological increment that the company comes obtaining along the years.

With relationship to the succession process, that comes about a weak point of the structure interns, it is understood that the director-superintendent is shown as a great leadership for the structure of the company, so much in the gerir form the business as in the formation of a culture own organizational. In this sense, the methodology of FOOT is shown as an important tool for the establishment of future decisions, supplying support to the process of succession of the company.

VALLE (1991) it considers three dimensions as the base for the obtaining of a high pattern of competitiveness, the illustration 5 illustrates these aspects.

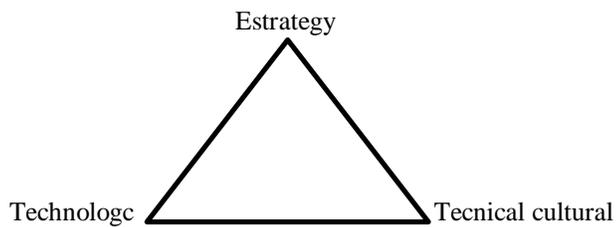


Figure 5. Three Dimensions of the Competitiveness

It can be considered that the researched company of certain form search the development of the three slopes previously placed, guaranteeing like this it a reliable strategic positioning and the technical training for a competitive market. The used methodology comes as an important tool in the elaboration and strategic formalization of the small averages and great companies. VALLE (1991) it places that many Brazilian companies never elaborated formalized production strategies, living in an improvised way the relationship between production apparel and the market. In spite of the company researched to formalize its strategic planning the methodology it already presented important aspects and previously not considered, contributing like this to a reposition so much of market as aspects of the structure organizational.

This way the simple application of this methodology supplies support to the strategic positioning of the company, contributing this way with the development of the economic and industrial politics of the country.

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