New Standards for Competitive Distinctions: A Practical Model

EDSON PACHECO PALADINI FABRÍCIA GONÇALVES DE CARVALHO

Production Engineer Department Federal University of Santa Catarina, Brazil. Campus Universitário da Trindade - CP 476 - 88040-910 - Florianópolis – SC. BRAZIL

paladini@floripa.com.br; paladini@deps.ufsc.br; fabriciage@gmail.com.

Abstract: This paper discusses how to create a knowledge modeling processes for strategic management. Innovation is the main strategy for the management approach. Basic concepts of knowledge management were used to support a proposed model that involves people in strategic decisions. The search for solutions to problems in the field of innovation management is justified by the stiff competition companies now face. In this situation, corporations need to transform their culture by giving incentives to the search for creative and innovative solutions generated by their human resources. This position is essential for organizations that attempt to create new standards of action and establish competitive distinctions.

Key-words: Strategic decisions; knowledge modeling; innovation management.

1 Introduction

The history of humanity has shown that the social evolution process involves various waves of change and it is now widely affirmed that we are in an Era of Knowledge. In this new era, in which a society based on knowledge is being consolidated, the process of innovation (the production of new knowledge that is more suitable to specific purposes) has become essential, particularly considering the competitive environment in which business organizations are now inserted.

Knowledge is now the most important factor in production, exceeding traditional resources such as labor and capital [1]. Nonaka and Takeuchi [2] maintain that in this new economy, where the only certainty is uncertainty, only knowledge can be considered a secure source of competitive and longlasting advantages. These authors highlight the importance of generating suitable commitments, situations and interactions so that information is converted into knowledge and can circulate through an entire organization, and positively influence judgments, behavior and attitudes.

According to Porter [3], knowledge is the economic resource most valuable to the competitiveness of companies and nations. One can observe, however, equivocal behavior of managers in efforts to adapt to new market demands, above all in terms of still unorganized processes to involve

individuals in the search, production and evaluation of knowledge.

The knowledge generated must have unequivocal value to a business organization. It must be adherent, current, useful and compatible with the daily practice of the people who compose the organization. To make viable its effective utilization, the knowledge must be retained in the organization, and shared by all those involved and stored for later applications [4].

This paper focus on knowledge modeling processes in a very specific way: as a basis to formulate strategic decisions. Innovation is the main strategy for the management structure of the organization.

We use here basic concepts of knowledge management to support a general decision support model.

In other way, this paper shows how individuals can be involved in innovation management processes. The theoretical basis involves basic concepts of strategic planning and basic notions of Knowledge Management.

The model proposed was applied to a well defined practical situation, a pharmaceutical laboratory, which was in the process of ending its operations in the market because of its aging brands and a lack of competitive ability. Its recovery was made through a process of innovation management.

2 Theoretical References: Knowledge and Innovation Management

In the current economic model, people, structures and clients form the Intellectual Capital of the Organization. The management model is democratic, emphasizing abilities, initiative and creativity. The managerial process must be strategic to be able to transform a company's organizational capability in order to meet market demands [5]

The role of leadership here is evident. In the realm of Knowledge Management, this leadership has been constantly emphasized [6], because winning organizations are those that have leaders who educate and who are prepared to extract the best from the Human Capital of the organization (knowledge and experience), in order to achieve distinct positions in the market.

Different authors have treated Knowledge Management in different ways. Some of them analyze positive and negative point of Knowledge Management (see [7], for instance). Some of them highlight the practical application of Knowledge Management (see [8]

Knowledge management is today a well—known science. In a most common sense, it includes tools, strategies and practical experiences used in a productive organization (industrial or services) to identify, develop, represent, distribute and make available different kinds of knowledge.

The actions in the area of Knowledge Management includes courses taught in the fields of different scopes, like business administration, production engineering, information systems and information sciences, management (in general), computer science, health and public administration [9].

Knowledge management efforts typically focus on organizational elements. These elements may be the general objectives of the company, selected strategies to act in market shares or actions to consolidate some differentials when comparing the organization with any concurrent.

Knowledge Management, so, try to create competitive advantages to the organization.

Improved performances are also an important objective of Knowledge Management. It can be included in the continuous improvement of the organization, the efforts that are made to guarantee a consistent growth of the company.

Knowledge Management confers high priority to human resources in this process. Some authors defend the idea that Knowledge Management has, as an important objective, to share lessons learned and guarantee continuous integration of the activities in the company.

Knowledge management is an established discipline since the beginning of the 1990 years [10].

There are important differences between Knowledge Management and the organizational learning processes.

Knowledge Management is a set of strategies to organize, distribute and share knowledge. It means: to help individuals or groups to work together, reducing redundant work, dividing relevant values, complementing activities, reducing time expended in technical activities that can be optimized (like training process, for instance) and retaining intellectual acquisitions [11].

In a strategic view, Knowledge Management gives critical contribution to the efforts of the organization in adapting to new situations, new environments or new markets.

Different motivations lead the organization to adopt Knowledge Management strategies.

Achieving shorter new product development cycles is one of them. It has particular interest to the context of this paper. To get better use of the expertise of people in the organization is also an important motivation of Knowledge Management. To get and maintain structured, accessible, available to all the organization, the knowledge Content is another reason to invest in Knowledge Management.

It can be easily seen that these actions help in the development and production of new items (products or services), since the support to these activities can be easily obtained. Another motivation that can be seen as of particular interest to this paper is facilitating and managing innovation and organizational learning.

As a general contribution, Knowledge Management increases the communication processes between internal areas of the organization and external sectors. It allows getting real time information, an essential characteristic to innovation processes.

The most common mechanism in this context is innovation management (constant alterations in products, methods and services) that requires an innovative vision from personnel. Terra and Gordon [12] express this situation well: "People are the DNA of an organization, while knowledge is the DNA of innovation".

As a general rule, two elements of the market function as stimuli for innovation: the growing demands of clients and the increasingly bold action of competitors. The later are of critical importance because they establish a strategic situation for organizations.

The achievement of results in a highly competitive environment requires investment in knowledge. This requires an organizational system and culture that allows the free flow of knowledge and creation. Above all, the model must be able to organize decisions that lead to actions and the evaluations that must be made.

Involved in a process of intense competition, organizations that want to succeed must create distinctions that make them references in their fields.

This effort is essential, given that it implies the very survival of the organization (and for this reason it is characterized as a strategic position).

Innovative products emerge in increasingly shorter periods. Thus, companies must always be prepared and more capable of generating and obtaining knowledge, to be able to transform products and services.

Organizations increasingly depend on information to make decisions that identify opportunities and create ways to better serve clients, by exceeding their expectations. To absorb this new work dynamic, companies undergo important transformations. Changes are accompanied by problems such as duplicated, lost, mixed or unprotected information and at times, information dependent on single sources (one person or sector) [13].

Sometimes, in specific sectors or areas, these chances acquire explicit approaches, as in case of school teaching [14] or supporting services [15].

These issues represent the main concerns of managers, given that they involve the strategic positions of the organization – after all, how is it possible to compete in a globalized market without dominating one's own knowledge?

Companies affirm that the best way to beat the competition is by supporting innovation. To continuously achieve new ideas it is necessary that employees, suppliers and clients form a single group, and undertake their actions in an organized

manner. For Garcia and Calantone [16], innovation is a process of development and of generation of new products and services that are capable of obtaining commercial success. For Dosi [17], it involves the search, discovery, experimentation, development and adoption of new products or new production processes.

Innovation is a source of growth for companies. But, to find, detect and develop an idea is not easy, and finding a market is even more difficult. Innovation involves three criteria: (1) it is something new, concrete and which advances (unlike an idea); (2) it is continuously improved and (3) is realized by means of a change of paradigm [18].

Innovation is one of the principal means of achieving a competitive advantage based on market needs. To innovate is to create new products and to develop existing ones, but it is also to improve production systems by adopting the latest technologies. Gavriloff [18] also maintains that there are principally two levels of application of innovation in companies.

The first is Limited innovation – an innovation project or innovation of a product. That is: a project to improve existing products, creation or adoption of a new state of the art technology.

The second is Permanent Innovation – total innovation or innovation management. At this level, innovation must be a pillar of company strategy.

In general, companies begin with innovation of a project to develop a new product or service.

To do so, it is necessary to establish criteria that classify the different types of innovative products to assist management to plan and organize projects individually, considering the needs of each one.

Some areas are always open and receptive to innovation, like environment or sustainable processes ([19], [20]).

But, anyway, innovative products are a strategic decision to productive organizations. It can be easily seen in development product processes.

In fact: The development of products takes place when the organization transforms the market data and technical possibilities into goods and information for the manufacture of a product to be placed in the market [21]. The coordination and management of product development includes various tools, technologies and fields of knowledge. Clark and Wheelwright [22] present a useful and easy-to-understand model of product development (see figure 1).

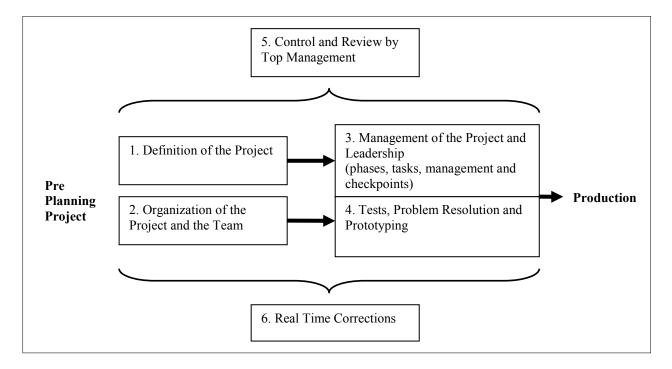


FIGURE 1 Product Development. Source: Stefanovitz (2006).

The elements that compose the model:

- a. Definition of the Project: this is the element responsible for establishing the scope of the project and defining its objectives;
- b. Organization of the Project and of the Team: this step defines who participates in the project and how each team will be organized;
- c. Project Management and Leadership: this phase defines the role of the leaders and how the activities of the project will be managed;
- d. Tests, Problem Resolution and Prototyping: this phase focuses on the individual work steps, on the ways they are guided and on the methods to resolve problems;
- e. Control and Review by Top Management: this phase controls the reviews, evaluations and modifications conducted by management;
- f. "Real-Time" Corrections: this phase conducts constant redefinitions of the schedule, organization and activities due to uncertainties in the process.

The model shows that to obtain success in product development, these six elements presented above must be integrated in a coherent and multifunctional system so that the people and phases of the process interact.

The question that persists is: *how to determine these interactions in an organized manner?* This article will respond to this question.

Based on the concept of innovation, it is noted that two dimensions are involved: novelty, which is the creation of new ideas for solutions, and viability, which is the convergence towards a new solution. Novelty resides in the process of creating new knowledge and leads to new ways of seeing reality and resolving the problems of organizations [2]. Meanwhile, the second dimension involves the technical and commercial viability of the process to materialize products.

Approximation of these two dimensions allows understanding that innovation (above all in terms of new products) requires the intensive use of knowledge. Smulders [23] characterizes the process of development of new products as a learning process given that for there to be an increase in knowledge, it is natural that there is learning, both at the individual and organizational level.

In a conclusive analysis, the strategic characteristic of innovation is clearly noted as well as the importance of the generation of knowledge in the process of innovation and the need to organize efforts to generate innovative attitudes and positions.

The literature consulted does not propose more explicit forms of involving people in the effort to seek different alternatives to action in highly competitive markets. This is the proposal of this paper.

The proposed model is presented below, along

with a practical case that consolidates the proposal formulated. In the case studied, the role of knowledge and innovation is quite visible, given that the development of new products is seen as a set of programmed innovations, in which companies create new products through existing and new knowledge.

In this context, new productive processes will be developed, supported by knowledge-Intensive Services [24]. Or, in general, by new technologies based on Knowledge Management.

3 A model for the Involvement of Individuals in the Innovation Process

To create, develop and consolidate innovative solutions in processes and products, effective involvement of all human resources of an organization is needed, in a constant effort that strives for excellence in activities (causes) that result in products effectively aimed at exceeding client expectations (consequences).

Human resource management has never been easy. In fact, human resources are those that are the most difficult to understand. For this reason, to involve them in an activity that demands dedication, perseverance and persistence is always a considerable challenge (this is, without a doubt, the case of the search for innovation). They demand more time and investment in the generation of satisfactory results and always have been considered the most complicated resource in organizations.

Despite this complexity, human resources are those that offer greater and better returns, precisely because they are the only ones that generate creative solutions. They are capable of proposing efficient forms of working and faster, more effective and lower-cost methods. That is, they are dedicated to finding new objectives, constantly overcoming new challenges. Therefore, the individual is the only resource capable of transforming organizations [25].

Precisely due to the complexity of human beings, the involvement of people in strategic actions has dimensions that go beyond operational decisions. Thus, two groups of interactions can be considered fundamental in the effort to involve human resources in innovative processes: (1) interactions between organizations and people and (2) interactions among people.

These groups of interactions can be divided into six steps for operationalizing the interactions that compose the effort to have people interact in the effort to search for innovative solutions for organizations. These steps are described below from a broad perspective on the issue.

The first step is intended to give direction to the interactions between people and between people and the organization, defining what each will do. This step includes the following actions:

- a. Initially, it is necessary to clearly and precisely determine the objectives set by the organization. This process can be conducted interactively considering the characteristics typical of the market where the organization operates and above all the context in which the innovation should be defined as the organization's operational distinction.
- b. Then, also interactively, the actions that will allow achieving the proposed objectives should be made viable. That is: determine the means necessary so that people can do what needs to be done.
- c. These two elements require that the work environments be configured. It is important to state where the actions will be taken.

These three first actions are critical, to the degree in which they have a strong impact on everything that comes afterwards. For this reason, they may take longer to be realized than the actions that compose the other steps. But it is fundamental that they are done well.

Step 2 defines the leaders of the process. This means defining the positions that will have the power to make decisions about specific portions or about the process as a whole. These leaders function as the official representatives of the organization with the others involved. Based on this definition, the relations are constructed between the people and the organizations, thus defining the organization of the work groups. Two sets of actions must be employed here:

- a. Definition of the project administration and of the administrations of the specific actions that compose it.
- b. Structuring of the formal relations between individuals and the organization.

In this step, the demands of each party are made clear - that is what the organization requires of its employees and the retribution that the employees expect of the organization. A clear, complete comprehension and perfect understanding of these aspects is crucial for the entire process. The definition of the process leaders must also be clear as well as the perfect understanding of the functions, attributions and the suitability of the individuals to the positions they occupy.

The third step defines the work model to be adopted. Here there are three actions:

- a. To list the activities to be developed and associate people to them.
- b. The definition of the model of teamwork.
- c. To establish the expected results.

A simple process of value analysis can determine which people should undertake which activities. Meanwhile, teamwork involves the organization of action groups as a function of the similarity of the profile or of actions to realize. The expected results are defined as a result of both actions, which allows creating a control process for the activities.

The fourth step is characterized by well-defined processes that refer to the organization of information. The proposal here is that these processes be formal, well characterized and perfectly managed. It defines which information will be passed to the teams, always considering the increased efficiency of the operations and the effectiveness of the decisions. To consolidate this step, the following actions are suggested:

- a. The transmission of information is conducted via well-defined and organized processes, involving lectures, seminars, meetings, sharing, etc. It is essential that all these activities are part of a well structured planning process that is perfectly compatible with the objectives set in the first step.
- b. With the information in hand, the actions are classified according to the nature of the teams: strategic, tactical and operational. The first should come before the second, which, in turn, precedes the third.
- c. Once the actions are classified, the respective operational strategies are defined.

The classification of the actions seeks to configure a model for increasing the efficiency in the process by means of the operations undertaken by people. Since the actions are undertaken in a sequence, there is a guarantee that all the activities are aligned with the objectives and characteristics of the teams, and principally, that the operational focus of all those involved is maintained.

In step number five the interactions established in the previous steps are broadened. The goal is now the whole. This step thus seeks the integration of the entire organization. For this reason an exchange of sectors, areas and departments is conducted. Its actions are aimed at understanding the operation of the company in the environment. Thus, it includes:

 Definition of the set of relations among people, areas and sectors. In reality, it involves the practical application of the system of

- information already developed in previous steps.
- b. Broad analysis of the consumer market. Here, the goal is to place the people in the organization in contact with those who purchase and use the products.
- c. Evaluation of the operational philosophy of the competitors. The entire concept of quality is determined by the action of the competition. Consumers and competitors are those who create the transition from the operating and tactical environments to the strategic context.

This step is comprehensively critical, because it deals, in its two last actions, with the most essential elements of the organization's panel of strategic decisions. This is where the process of innovation management is made concrete. The strategic decisions are proposed at this time.

Finally, the sixth step consolidates the structure and the decisions taken previously. For this step to develop the content, it is necessary that the involvement of people be processed in terms of their culture or according to their values and beliefs. For this reason the following actions are included:

- a. Definition of strategies and motivational mechanisms. This definition is based on a need to show people the reason (why) certain decisions should be taken and others should be executed. The result of this effort is reflected in the engagement of people in the process because they want to, they direct their will to search for innovative solutions and involve themselves with this performance because they are sure that this action is critical to the survival of the organization.
- b. The transformation of quality into value: the people in the organization understand, accept and are committed, or that is, they internalize the concept of quality. They believe this is the critical element in the process for generation of knowledge for the management of innovation. Or that is: they direct their actions to completely serve the consumer market.

In general, this set of steps and actions can be used both to involve people in the strategic effort of the organization and to evaluate the common administrative procedures used. This thus allows redirecting the organization's form of action.

A practical example was considered to give consistence to the steps and phases described. It involves a general decision support model, like some others used in different areas, as medicine, for instance [26].

4. The case study of a pharmaceutical laboratory

The pharmaceutical laboratory that is the object of this study has been characterized by employing bold ideas, since it began activities. It created, for example, one of the first research organizations in the pharmaceutical industry and during its 130 years of market operations, the company constructed a solid reputation in the sector for innovative medications.

It is one of the world leaders in this sector, currently employing more than 41,000 employees throughout the world, with sales in more than 158 countries. Its market actions are highlighted by the world's first commercial medicine, the mass production of vaccines and various other medications of extreme importance. It can be considered a leading company in its sector today.

Operating in Brazil for more than six decades, in the past five years the laboratory has resolved to focus on opportunities and risks created by innovation, leaving behind its traditional products, which it came to consider obsolete. As a result, it began to also abandon its traditional managerial model.

The first step in the model proposed was the release of new products, motivated by competition from generic medications. This was the starting point for the company's restructuring.

It was necessary to decide what direction the laboratory should take, with clear objectives and goals, as well as the other elements listed in step 1 of the proposed model. The laboratory then undertook the process of involving its employees in actions similar to the other steps in the model. Priority was given to complete understanding and total adhesion to the objectives set, and to the adaptation to new operating guidelines. This organization of activities was the most efficient contribution so that the entire process of the pharmaceutical company would become viable and successful. Today, one of its directors admits that, at that time, there was no other option. It was either take the new route, or close its doors.

The decision to innovate and the structuring of the process derived from problems that the organization confronted in the late 1990's when antibiotic sales fell drastically. The root of the difficulties was the stiff competition from the rise of generic medications. In reality, this issue affected all companies in the sector and forced them to restructure. But, at that time, the problem appeared particularly critical to this laboratory because its

specific portfolio was more subject to the attack of generics.

To begin the restructuring, the top management began designating managers to be responsible for conducting the innovation project as a whole and some of its most critical steps (similar to that proposed in the second phase of the model). These managers – and the general manager in particular – had complete knowledge of the organization and together with the employees, defined and analyzed criteria for obtaining satisfactory results.

Based on the information and on the well defined processes transmitted by the top management (see step 4), the strategic actions for the organization were defined. These strategic actions were segmented by action plans and consolidated with the participation of all the employees.

The adequate performance of the employees based on their technical characteristics (capacity and competence) and personal qualities (determination, enthusiasm and motivation) guaranteed that the actions they performed would be realized in the best way possible, determining how they should act and thus increasing the efficiency of the entire process (steps five and six).

The team work of the people of the laboratory (step 3 of the proposed model), as well as the organization of the groups by sectors, reinforced the entire new restructuring, as well as new investments in clinical studies, thus suggesting new products that would refortify the laboratory.

In the late 1990's, the pharmaceutical laboratory was the 11th among those in Brazil. In 2001, it was the 30th in the national ranking. For this reason the company was required to change in order to survive the competition.

The renovation plan was begun on May 2001. The most difficult and risky decision was the sale of 21 traditional brands (a vision compatible with the innovation effort), which had represented nearly one third of its billing in Brazil. Its strategy was to drop the consecrated medications, which had a low margin of profitability, to release new more expensive medications, based on high technology and which were thus more profitable.

The results obtained were very satisfactory. The pharmaceutical laboratory substantially increased its multiplication of research and little by little the results of this investment in innovation began to appear with its release of the first medication competitive with the market leader in the segment.

This medication now has sales levels equal to those of the medication that had been the isolated leader in the market just a few years ago. Because the company abandoned its former products, its old factory was closed and another was built, at a cost of R\$30 million, alongside the company headquarters in São Paulo. The company then began to aim at new markets and made investments to be able to compete as an equal with what was taking place outside the country. Since then, the company has reinforced its investments in clinical research, consolidating its option for innovation, to be able to place new products on the market.

In 2006, the laboratory invested US\$ 4.2 million in research, or that is, 50 times more than ten years earlier, when it invested only US\$83,000. Due to the increased research, the arrival of medications to Brazil accelerated rapidly. In the 1990's, when a product was launched at headquarters in the United States, it took five years to reach Brazil. Today, this process takes an average of one year. Once again it is noted that the most important creation of this laboratory was the release of a medication aimed at competing with the medication that was the unquestionable leader in its market segment, because it operated for many years in that market.

These results show the consequences of the option taken. They are in reality, the results of the option for innovation through an organized process to involve human resources (as proposed in the model).

Sales nearly doubled in the past five years, the company returned to the ranks of the top 15 largest in the country. The company director president said "We will continue to invest in innovative products. Only in this way can we grow three times more than the market." (To maintain confidentiality, the source will not be named).

5. Benefits and restrictions to the use of the model proposed

The study of the organization mentioned, combined with an analysis of other similar cases, allows listing some immediate benefits of the application of the model proposed here.

As can be seen, the case described is close to the real characteristics of the model and presents a set of strategies prepared to leverage the organization in question. Other practical examples were considered and from them it is possible to list the following results as consequences of the implantation of the proposed model:

- Restructuring of the process and of the organization as a whole in a reasonable timeframe. This restructuring also contemplates the management models that had been in use.

- All those involved were provided broad access to information. This element indicates a management position to motivate all sectors.
- Continuous investment in the professional development of employees.
- Fair retribution of the organization in relation to employees (this case was clearly characterized in the laboratory studied).
- Priority to the research and development actions as the most important form of minimizing operational difficulties in the market.
- Selection of well structured strategies, which allow accompanying their continuous execution. Perhaps this monitoring has been critical to success and the generation of positive results.
- Change in the organizational culture as a foundation of the success of the entire process.
- A substantial alteration in management models.
 The most viable change refers to abandoning merely operational decisions for the practice of tactical management and a model of strategic management.

It should also be observed that the changes generated by the implementation of the model tend to be maintained for a long period, or that is, they are quite steady. This is due both to the fact that they were implemented step by step, and because they involve people in terms of values or in a change of the local culture.

Some limitations of the model can be identified that involve operational difficulties.

These difficulties stem from strategic elements and actions related to human resources and to changes in the market that affect the organization. It can thus be affirmed not that there are disadvantages to the innovation process, but difficulties to be overcome.

Practical experience reveal the two most common problems to consider in this case:

- There are risks inherent to the decisions that support, require or consider innovations. In the practical study conducted here, it was observed that "running risks" is part of the process. Not all organizations understand that certain moments in their history demand the courage to make changes. Thus, conservative organizations are not suitable for the implantation of models such as that proposed here.
- Giving up old brands, which for a long time were the leader of the pharmaceutical company and which still generated good income, to launch a

new line of products was a difficult decision. Once again, fear of the new arises and an attachment to conservative positions.

To minimize the difficulties found, it is necessary to establish objectives focusing on the strategic management of the organization – and this is an essential point in this paper. In the case of the laboratory studied, innovation was the strategic base and the means to that innovation was investment in research and development, to consolidate the model in question. Based on the analysis of this organization, and of other similar cases, some practical suggestions can be formulated to help minimize the difficulties:

- Know what the market is looking for and seek to surprise it.
- Create effective interaction with competitors: it is necessary to monitor, predict and evaluate what they are doing.
- Always operate with well defined strategies.
- Generate a human resources management model based on reciprocity, or that is, a clear definition of what each party, organization and person should do and what they will receive in exchange.
- Create an integration of the entire organization: sectors, areas, departments, etc. And above all, among people.
- Create a process of analysis of value of the suppliers, to increase efficiency in the productive process.

Perhaps there is no other route to success that is not that of innovation. But, certainly, it cannot be obtained intuitively.

4 Conclusions

The survival of the organization depends on its ability to compete successfully in a globalized world, with innovation being the most important action that makes this possible.

Innovation is a critical means to getting ahead of the competition, conquering new markets or even increasing markets where a company is already present.

The strategic change made by the pharmaceutical laboratory studied, which had had leadership positions and wanted to win them back, can be explained by the stiff competition experienced by companies today and which require crucial structural changes.

Although it is organizations that plan and develop new products, it can be said that products define organizations.

It was observed that the most important decision of the laboratory was to sell its old brands and

launch more profitable products, aimed at conquering its position in the market.

If the development of new products transforms the market needs and the new ideas into new products, this creative process is responsible for the generation of new ideas and the knowledge needed to achieve an innovative product. It was in this way that the pharmaceutical laboratory was able to reestablish itself.

Developing new products involves processes for creating knowledge and this knowledge is generated through innovative projects that are transformed into new markets and new industrial processes.

Given this case, it can be concluded, with certain obviousness, that there is a constant need to feed knowledge and stimulate innovative thinking, because this is the only way to create competitive differences that surprise the competition.

Finally, it is worth noting that will and determination are not enough. Planning, organization and actions that involve human resources are needed in the effort to create a strategic direction for an organization.

References:

- [1] DRUCKER, P. Sociedade pós-capitalista. São Paulo: Pioneira. 1993.
- [2] NONAKA, I.; TAKEUCHI, H., Criação de Conhecimento na Empresa: Como as empresas japonesas geram a dinâmica da inovação. Rio de Janeiro: Campus, 1997.
- [3] PORTER, M. E. Criando e Sustentando um Desempenho Superior. Rio de Janeiro: Campus, 2003
- [4] STEWART, T. A. Capital intelectual: a nova vantagem competitiva. Rio de Janeiro: Campus, 1998.
- [5] DAVENPORT, T. H.; PRUSAK, L. Conhecimento Empresarial: como as organizações gerenciam o seu capital intelectual. Rio de Janeiro: Campus, 2003.
- [6] KLEIN, D. A. A Gestão Estratégica do Capital Intelectual: Recursos para a Economia baseada em Conhecimento. Rio de Janeiro: Qualitymark, 1998.
- [7] METAXIOTIS, Kosta; ERGAZAKIS, Kostas; PSARRAS, John. Exploring the World of Knowledge Management: Agreements & Disagreements in the Research Community. WSEAS Transactions on Computers. Issue 5, Volume 3, November 2004. P. 1695 1704.

- [8] IULIANA, Scorţa. A knowledge management practice investigation in Romanian software development organizations. *Wseas Transactions on Computers*. Issue 3, Volume 8, March 2009. P. 459 468
- [9] ALAVI, Maryam; LEIDNER, Dorothy E. Knowledge management systems: issues, challenges and benefits. Communications of Association for Information Systems. Vol. 1, number 2. 1999. p. 1-37.
- [10] NONAKA, Ikujiro. The knowledge creating company. Harvard Business Review, 69 (6 Nov-Dec). 1991. p 96-104.
- [11] McADAM, Rodney; McCREEDY, Sandra A critique of Knowledge Management: Using a social constructionist model. New Technology, Work and Employment 15 (2). 2000. p. 155-168.
- [12] TERRA, J. C. C.; GORDON, C. Portais corporativos: a revolução na gestão do conhecimento. São Paulo: Negócio Editora, 2002.
- [13] PORTER, Michael E. Vantagens Competitivas das Nações. Rio de Janeiro: Campus, 1992.
- CHEN, Zhen-Gang; CHIANG, Wen-Jiuh; [14] FANG, Rong-Jyue; CHEN, Wen-Chin; GUO, Yuan-Chang. The Superiorities and Difficulties Of Application Knowledge Management For Elementary Teachers. Proceedings of The 9th WSEAS International Conference on Multimedia **Systems** and Signal **Processing** (MUSP '09). Hangzhou, China, 2009. p. 200 -205.
- [15] LEE, Hyun ah; LEE, Hye jin; KIM, Dong ho; KIM, Jin suk. The location-based knowledge management system development for e-logistics application. *WSEAS Transactions on Computers*. Issue 3, Volume 2, July 2003. P. 834 840.
- [16] GARCIA, R.; CALANTONE, R. A critical look at technological innovation typology and innovativeness terminology: a literature review. *Journal of Product Innovation Management*, Malden, v.19, p.110-132. 2001.
- [17] DOSI, G. The nature of the innovation process. In: DOSI, G. et al. (Orgs.)

- Technical change and economic theory. London; New York: Pinter Publishers. 1998.
- [18] GAVRILOFF, Ivan. *Une innovation part toujours d'une ambition*. Journal du Net. http://www.journaldunet.com/management/d https://www.journaldunet.com/management/d <a
- [19] KRALJ, Davorin. Green Innovation Trends and Systems Thinking. *WSEAS Transactions on Environment and Development*. Issue 4, Volume 6, April 2010. p. 245 254
- [20] KRALJ, Davorin; MARKICC, Mirko. Processes Innovation and Sustainable Development. WSEAS Transactions on Environment and Development. Issue 2, Volume 4, February 2008. p. 99 108
- [21] CLARK, K. B.; FUJIMOTO, T. *Product development performance:* strategy, organization and management in the world auto industry. New York: Business School Press. 1991.
- [22] CLARK, K. B.; WHEELWRIGHT, S.T. Revolutionizing Product Development: quantum leaps in speed, efficiency, and quality. New York: The Free Press. 1992.
- [23] SMULDERS, F. E. Co-operation in NPD: Coping with Different Learning Styles. *Creativity and Innovation Management*. v.13, n.4, p.263-273. 2004.
- [24] TUČKOVÁ, Zuzana; STROUHAL Jiří. Knowledge-Intensive Services: New Leader of Production Stages? WSEAS Transactions on Systems. Issue 4, Volume 9, April 2010. p. 432 441.
- [25] PALADINI, E. P. Gestão Estratégica da Qualidade. São Paulo, Editora Atlas, 2009.
- [26] SANTOS M.; PORTELA, F.; BOAS, M.; MACHADO, J.; ABELHA, A.; NEVES J.; SILVA, A.; RUA, F. Information Architecture for Intelligent Decision Support in Intensive Medicine. *WSEAS Transactions on Computers*, Issue 4, Volume 8, 2009. p. 810-819.