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Model Technology Management for Industrial Project Implementation

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Abstract: One situation that has brought problems in the colombian business sector has been the same dependence as technologies are concerned. In this sense, technology management involves driving all aspects related to the generation and introduction of technological changes in the company, allowing catalyze innovations in strategic, managerial, cultural, organizational and infrastructure systems inside. In this context, the investigation to be applied for industrial projects, why the general objective to propose a model of technological management for industrial projects is justified. For this, a theoretical basis is established authors like Chiavenato, Hurtado and Toro, Paneque which served as reference for this investigation for which a methodology was used with a field design not experimental, transactional descriptive. As for the results and l purpose it is to meet the requirements of the industry which in turn translates into good service for customers who depend on it, ensuring growth and profitability for shareholders, keeping the resource human both qualified as motivated as well as continuous improvement of processes in optimal safety conditions.

Key words: Technology management, project execution model industry, generation and introduction, transactional descriptive, colombian business sector

INTRODUCTION

Within the primary when establishing any management plan points you must understand the characteristics of each nation characteristics which for various reasons create particular conditions just as the industrial and technological park of the cities, responding to the characteristics or own needs of that environment therefore, they should go to companies that can provide services regarding machinery be constantly monitoring its proper functioning, considering aspects such as preventive and corrective maintenance (Chiavenato, 2013a, b).

However, it has been found through some observations which the companies mentioned; they have seen in a very worrying situation for lack of a technological management model for the implementation of projects focused on the effective and efficient preventive maintenance, practice oriented formats execution and control of repairs. Therefore, these companies despite providing vital services to its proper functioning do not have a technological management model.

Theoretical foundations: The technology management should consider as processes. In the case of design technology management models, it is indisputable not to mention process management that is meant as a tool to achieve the objectives of total quality in an environment with certain business features. So, carry out a process of execution processes should focus on elements relevant to the needs of each company, attached to the continuity of care focused on attempting delivery single and coordinated services (Chiavenato, 2013a).

Thus, technology management must have bases in the integral vision of the process in which all the material and immaterial aspects of a company focused on obtaining answers are considered. So that, service companies in the electricity sector have characteristics that place them as companies key to the development of new technologies and the implementation of various services that improve business productivity. One of the factors that shape service companies in the electricity sector companies as potential corresponds to the initiative to create execution models molded to the cutting edge technological parameters providing management projects. Thus, when considering applying a model of technology management to strengthen the various structures of the company, it should be noted that any model must first begin by few phases in this sense the initial phase lies in the diagnosis, it is understood as an experiential activity involving a group of people of a

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company or institution interested in proposing solutions to problems or conflict situations, undergoing a self-analysis to solve the problem situation (Hurtado, 2014).

Models for technological innovation process: There are several models from which can be noted, the innovation model developed by Roberts and Frohman in which only takes into consideration related to the development of machinery and equipment without considering other aspects of innovation can be the industrial process and social considerations thereof (Hurtado, 2014; Paneque, 2014).

Other researchers like Livesay divide the innovation process into 3 main stages based on the technical activities of the process. This is more comprehensive than that proposed by Robert and colleagues because already proposed a management stage developer of new products (Paneque, 2014).

Meanwhile, Peter Drucker relates 7 sources of opportunities for organizations seeking innovation 7 are signs of change. Related order of increasing difficulty and uncertainty, they are (Paneque, 2014):

- The unexpected success that is gratefully received but rarely analyzed to find out what happened
- The incongruity between what actually happened and what was supposed to happen
- Inadequacy in an existing process that is taken for granted
- Changes in the structure of industry or market which surprises everyone
- Demographic changes caused by wars, medical advances or the same superstition
- Changes in perception, mood or changing fashions, produced by ascents or descents of the economy
- Changes in expectations caused by new knowledge

Technology push model: The model of technology push considered the first generation from 1950 to the middle of the sixties was seen as a dominant model of innovation which goes from the orderly progression of technological discovery, through the applied research, technological development and production activities to conclude new products to market (Chiavenato, 2013a).

However, from the point of view of this model they were not considered aspects that a research center would be important for marketing today such as the importance of legal advice for the registration of patents. It also notes a focus more toward research from the technological point of view but with little development in the commercial aspect, especially its feasibility (Hurtado, 2014).

Market milestone model: In the second generation of technology management models milestone model or market need was handled. As reported (Alzugaray *et al*., 2012) is recorded in the late sixties increased competition, so that studies of the innovation process begin to give greater emphasis to the market which leads to conceive innovation as the result determined by the need or market (need-pull or market-pull) whereby it was felt that the innovations came from the clearly articulated needs of customers (market).

Mixed model of innovation management (Alzugaray *et al*., 2012; Arocena and Sutz, 2012) mention that in the seventies several empirical studies showed that linear models of innovation by technology push or pull on simplified necessity or were not actually achieved the link between science, technology and market. This was solved later with the coupling model which referred not only logically sequential process and not necessarily be continuous but it had represented a number of distinct but interacting functions interdependent steps including technologically and market needs in a firm (company) innovative.

Integrated innovation management mixed model although the model of the third generation of the innovation process contains feedback loops it continued to remain sequential (Arocena and Sutz, 2012). Therefore, the model of the fourth generation although characterized as parallel was integrated. Alzugaray *et al*. (2012) and Benneworth *et al*. (2014) explain that the fifth generation of management models called integrated systems and networks is the use of sophisticated electronic tools that increase the speed and efficiency of product development throughout the system innovation that is within the company but also abroad, suppliers, customers and partners in essence, the fifth generation of the innovation process mentioned authors is the fourth generation but with a new technology technological change to increase the speed and efficiency of innovation.

Technology transfer in Colombia: The transfer of technology may include the transfer or licensing of technology developed by one person in favor of another for the purpose of implementing and enjoying it. The objective of this activity is the use of resources, expansion of the target market reached by technology and economic and social growth of stakeholders (Benneworth *et al*., 2014). According to the World Intellectual Property Organization (WIPO) technology transfer is conceived as a series of processes aimed at sharing ideas, knowledge, technologies and capabilities

with another individual or institution (e.g., a company a university or a government agency) and the acquisition by the other side of those ideas, knowledge, technologies and capabilities. In the area of technology transfer from the public sector and from universities to the private sector, the term "technology transfer" is sometimes used more strictly; it is a synonym for "technology apply the results of basic scientific research conducted by universities and public research centers to business production.

In Colombia, according to surveys of technological development and innovation in 2014 for innovative and potentially innovative companies some of the obstacles to innovation considered as having high and medium importance are: scarce information on technology Available to 45.6% of these companies and the lack of qualified personnel for 51.3% of them. In the case of services in 2013, the percentages are: 37.4 and 47.7%, respectively.

MATERIALS AND METHODS

A address research required, by the researcher, located within the epistemological context, i.e., follow certain strategies in order to meet the expectations of scientific fact, due to this, the use of approaches is determined at the time of the investigation. Therefore and his type of research, assumes that reality is stable and deals with a reliable, measurable, verifiable method. It is part of a concept established a priori or deductive strategy sing and because he aim it was to explain the phenomena by establishing their causal relationships and achieve verification or checking the pre-established theory.

After the conception of the model a sample of 3 metalworking companies with similar technological conditions in the city of Barranquilla-Colombia and the model was implemented.

RESULTS AND DISCUSSION

When viewing the results of the study, it is evident that technology management is very complex for many companies, reasons can be found pockets of resistance as attached to contribute to the changes. This is because either in the first case and the second case concerns curiosity; however whatever the decision no longer a situation that generates the growth of new techniques, tools and philosophies aimed at optimizing the means and facilities for this reason the model presents the model of technology management for implementation industrial projects presented in the following parts (Chataway *et al*., 2013, 2010; Soares and Cassiolato, 2013).

Table 1: Technology transfer of metalworking companies between 2015 and 2016

Company	Technology transfer June 2015 (%)	Technology transfer June 2016 (%)	Technological change 2015-2016 (%)
1	20	38	40
2	15	41	60
3	18	50	51

Phase 1: Surveillance technologies is perhaps the most difficult stage because in this resistance to changes in the company who leave their countries are presented. This will have to analyze the specific situations of each company which can be done through frequent meetings between project leaders and workers in order not only to enrich multidisciplinary the team.

Phase 2: Technology planning; this stage represents the beginning of the project, reached an agreement on the negotiation period for which it is appropriate to sign agreements to start the model. It includes the signing of a contract to establish the legal sane gear requiring support legality before formally starting the project.

Phase 3: Enabling technologies is the stage of memory and mind in which project leaders of the companies responsible for the project implementation show the results obtained and legal supports it. To do this you must close the project delivering all formats developed for the best performance of the company, also the historical situations that arise during the application of technology management model.

Phase 4: Protection of technology heritage here, you can specify the requirements for establishing, implementing, operating, monitoring, reviewing, maintaining and improving a technology management system, implementation of standards and strategies, leads necessarily to define. Scope and policy to continue to make the project thus, efforts are managed in the enterprise security protecting it under three main aspects; confidentiality, integrity and availability.

Phase 5; implementation of innovation: Solving strategies for each practice innovation where you can reach even give solution to each of the segment-specific questions made during its implementation are proposed. For this, proposed to elaborate an analysis of results which can be done in two phases; the first from a general point of view and the second with a more specific focus and will depend on the type and class of business in which the leader of the project work (Table 1).

CONCLUSION

As described, each of these phases are geared to meet the needs of industry such as acquisition, assimilation, adaptation and technology optimization and the development of strategies that are able to address the development of technological capabilities with a view holistic and systemic because the sector studied is part of a dynamic, complex and interrelated structu that is why the technical functions of the company refers to the generation of technical change and the way it is administered for large projects investment. The model was applied to three companies in the metalworking sector with a similar technological structure in Barranquilla, Colombia. The results obtained during implementation are shown in table. This shows an increase of 147% on average in the technology transfer companies in studies. Most teams based on tale as rectifiers and milling of own construction. As well as methods and material processing techniques.

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