

# Project Management and Innovation

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## Abstract

The purpose of project management is mainly the planning, monitoring and control of activities, as well as the human resources and inputs involved in the organization for the development of a project. Project management methodologies and procedures operate in a wide range of applications, from administrative projects to complex engineering projects. Organizations develop projects that require different processes than traditional ones. These projects, limited by resources and deadlines, require the participation of people with different competences, which generates unusual conflicts. Companies need to develop projects that require structures and treatments different from traditional ones. Innovation has never been as present as it is today, everyone talks and reads about it. Innovation is a process that must allow and encourage the generation of ideas, as well as define the tasks and activities so that these concepts become innovative products and services of value.

**Keywords** – Management, projects, innovation.

## INTRODUCTION

Nothing is perfect, neither the project management system or frame of reference, nor director, among others. In philosophical matters about the perfection or imperfection of things, there is an incontestable fact, the projects (at present) are directed and executed by human beings. Even though we are obviously not perfect; even more, regardless of skills and motivations, they can be the real obstacle to change in organizations. When the barriers are people, you can't just change things based on what others have done, copying or imitating. No measures can be imposed from the management offices. You must know the people to whom these measures are directed, know their problems and empathize with them.

Currently, the need for organizations to be competitive leads them to integrate innovation with project management, since combining both represents an increase in the improvement of organizational development. The Competition is increasing, so it is necessary for companies to innovate in order to maintain competitiveness in a market increasingly saturated with options for consumers.

The company's competitiveness is based on its business strategy being based on project management and the ability to innovate. However, many organizations still maintain a structure that is too rigid or too traditional or closed a mentality that allows us to modify their strategy, the management of their projects.

Conceiving and implementing changes in processes to improve results is part of what we understand by innovation. The fact that it works, that it produces results, is what differentiates an innovative solution from a simply creative one.

## THEORETICAL FRAMEWORK

### *I. Management*

A set of decisions that revolve around achieving a projected goal through strategic processes, such as in the formulation of innovative projects; thus, the need arises to have methodologies and tools to evaluate the capacity of innovation management,

with a view to intervening timely and assertively organizations, which through the management of innovation projects can find solutions that are consistent with the result of the evaluation and evolution of their capabilities and that respond with their strategic purposes, in order to make companies more competitive in their respective markets as confirmed by [1].

Likewise, [2] defines it as: "It is the action of administering a professional activity aimed at establishing the objectives and means for its realization, to specify the organization of systems, in order to elaborate the development strategy and to execute the management of personnel. Likewise, in management, action is very important, because it is the expression of interest capable of influencing a given situation". (p. 13)

The term is usually linked especially with the business or corporate world, with the actions that a company develops to achieve defined goals. However, not only companies, projects, or economic assets are managed, but any type of resource.

## *II. Project*

When approaching the definition process, it is possible to realize that trying to reach a concordance or axiom regarding what a project is a difficult issue, however, and although they all propose different paths, everyone assimilates that the ultimate goal of the project is to be able to satisfy an expected need. According to the Project Management Institute (PMI, 2008) a project is: "A project is a temporary effort that takes place to create a unique product, service, or outcome. The temporary nature of projects implies that a project has a defined beginning and end. The end is reached when the objectives of the project are achieved, when the project is finished because its objectives will not be met or cannot be met, or when the need that gave rise to the project no longer exists. You can also terminate a project if the client (client, sponsor, or leader) wants to finish the project.

That it is temporary does not necessarily mean that the duration of the project must be short. It refers to the commitments of the project and its longevity. In general, this quality of temporality does not apply to the product, service or result created by the project; most projects are undertaken to create a lasting result. For example, a project to build a national monument will create an outcome that is expected to endure for centuries. On the other hand, projects can have social, economic and environmental impacts that can last much longer than the projects themselves."

While [3] synthesizes the term into two concepts: temporality and uniqueness or singularity; the first concept shows that each project has a clearly defined beginning and end; while the second is that each product or service generated by a project is unique. This is complemented according to [4], indicating that each project has a cost, with the participation of human, material and logistical resources.

## *III. Innovation*

According to [3] each project has its uniqueness (it is unique), so far it has never been done, it is an innovation that is radical (causing great changes) or incremental (that promote the process of continuous change, incorporating minor changes).

According to the [5], it tells us what innovation is: "An innovation is a new or improved product or process (or a combination of both) that differs significantly from the previous products or processes of the institutional unit and that has been made available to potential users (product) or implemented in the institutional unit (process)."

Innovation is the result of the process of generating ideas and transforming them, placing it as a key piece, when taking it into account it has an importance in the development of organizations. It can affect the way in which they offer their services for the benefit of the client, making an effort in the search for a better position in the local and international market. Competitiveness affects organizations by integrating innovation, which gives it sustainability over time in order to better manage the adversities of the business environment, which today is globalized, so that companies that invest more in Research and Development (R & D) are usually more competitive. Organizationally there is a complexity in understanding the effects of innovation, since the organization affects at all times and is continuously modified to meet the needs of this [6]. With continuous innovation, specialization is reached and with discontinuous innovation, new consumer needs are met from the development of a new scheme of capabilities. This happens because new combinations or inclusion of knowledge, tools, technology and processes change the fundamental character of customer needs by changing the boundaries of what is possible. In fact, new knowledge continually creates new realities [7].

The goal is not innovation for innovation's sake but to achieve the consistent effectiveness of organizations towards their different stakeholders, the acceleration of change and the management of continuous and discontinuous innovation as a means to achieve competitiveness.

## **METHODOLOGY**

### I. Search strategy

Taking into account that the concepts of project management and innovation have been permanently researched around the world by organizations and educational institutions, there is a vast search library on the subject, so it was delimited to databases recognized by the study of administrative sciences and engineering (Science Direct, Scopus, IEEE Xplore, Redalyc, ScIELO, among others), as well as documents with a publication date of no more than five years.

Among the criteria for the achievement of data and reasonable information that contribute to the fulfillment of the objective of this document was the integration of the following keywords: Project Management and Innovation. Subsequently, the application of reasonableness filters was carried out, mainly of a type of document: research articles, and the exclusion of very specific articles in terms of case studies oriented to computer science and health sciences was carried out. Five (5) research variables are defined: 1) definition of management, 2) project management, 3) innovation, 4) skills and 5) direction. Together, based on these five variables, each of the selected databases is investigated.

In Project Management, the use of a methodology implies is thematization. That is, the organization of the steps through which a certain project will be executed. As well as innovation requires approaches and frameworks that act as a roadmap and facilitate its development. Usually the way in which companies have innovated has been safeguarded internally and maintaining the secret from beginning to end of development, the above makes the risk implicit in innovation grow exponentially, because until the end it will be known whether or not the product or service being developed will be satisfactory; but the environment today is more active, more informed, connected and demanding, this forces companies to create greater value, and this value is achieved by offering them an active part in their innovation processes. Project management methodologies are essentially different ways of approaching a project. Each has its own unique process and workflow.

### II. Content

#### *Differential elements and specific methodologies in project management and innovation*

The definition of the projects is very broad and also involves efforts made by companies and the academic sector to generate new knowledge and materialize it in products and / or services, organizational models and processes that allow it to be more competitive and generate a social and economic impact

### III. Differences between projects

As for the different classifications of a project, two great characteristics can be highlighted. There are productive projects, which are those that aim to generate economic benefits, and public or social projects that seek to improve the quality of life of the population.

TABLE I  
DIFFERENCES BETWEEN PROJECTS [8].

Typology	Objective	Feature	Result
Research	Generation of new knowledge, with the aim of acquiring a deep understanding of the phenomena under study and the possible applications that may be carried out in the future.	This type of research is characterized by evidence of a great gap in knowledge worldwide about the problematic object of study, which leads to perform this type of projects to build a conceptual basis that allows the advancement of the science in this subject.	<ul style="list-style-type: none"> <li>- New knowledge of observable phenomena and facts.</li> <li>- Generate, substantiate and support new theories and research.</li> <li>- Verify and validate existing theories or investigate them with a new approach.</li> </ul>
Research		They seek to determine possible uses of available knowledge, or to determine new methods or ways to achieve predetermined goals.	<ul style="list-style-type: none"> <li>- New knowledge that contributes to the partial or total solution of a need or an identified problem.</li> <li>- Verify and validate research already Existing.</li> <li>- Generates the basis of</li> </ul>

		Develops ideas and makes them operational	knowledge for an application sector.
Applied		It can be considered as the transition between the application of a knowledge and its materialization. It seeks to reduce the uncertainty that an idea can materialize and obtain the expected results. To do this, greater knowledge is generated about the factors that influence the result.	<ul style="list-style-type: none"> <li>- Analyze and validate the usefulness of products, processes or services, based on generated or existing knowledge.</li> <li>- Aims to generate new products, processes or services, and improve those already existing at laboratory scale.</li> <li>- New theorems and algorithms in the area of theoretical computer science.</li> <li>- Experimental development aimed at solving the lack of knowledge technological necessary to develop a computer system or program.</li> </ul>
Development	Materialization of the knowledge available or obtained by the entities participating in the project, in prototypes, pilot plants, models to validate their usefulness in satisfying a need either internal, external or market	Development projects perform validations of the solutions at the prototype and pilot level, before scaling up at an industrial level, its objective is to reduce the uncertainty generated from the theoretical solutions proposed.	<ul style="list-style-type: none"> <li>- Prototypes, pilot plants, models.</li> <li>- Design, optimization and / or standardization of processes at pilot level.</li> <li>- Design validation and its impact on improving the quality of goods or services.</li> <li>- Development of information technologies in relation to operating systems, programming languages, data management, communications programs and tools for the software development.</li> <li>- R&amp;D in software tools or technologies in specialized areas of computer science</li> </ul>
Innovation of service product		Introduces new or significantly improved products or services for the industry.	<ul style="list-style-type: none"> <li>- Substitution of products or imports.</li> <li>- Product development friendly to the environment.</li> <li>- Development of new functionalities that increase value product aggregate or service.</li> <li>- Entry into new markets.</li> </ul>
Process innovation	Placing a product or service on the market or the implementation of a new industrial-scale process or organizational method in all areas involved	Implementation of new or significantly improved processes of manufacture or provision of services	<ul style="list-style-type: none"> <li>- Reduction of response times to the needs of the clients.</li> <li>- Reduction of consumption of raw materials and energy.</li> <li>- Improvements in flexibility of the production process or provision of services.</li> <li>- Increases in production capacity or provision of services.</li> <li>- Cost reduction of labor.</li> <li>- Product reduction out of specification.</li> <li>- Reduction of product design costs.</li> <li>- Cost reduction operational for the provision of services.</li> <li>- Optimization of a process.</li> <li>- Significant improvement in quality of service</li> <li>- Impact reduction Environmental.</li> <li>- Reduction of response times to customer needs</li> </ul>
Organizational Innovation		Implementation of new models of organization at work, mainly in the organization of the workplace, the external	<ul style="list-style-type: none"> <li>- Cost reduction administrative and/or transaction.</li> <li>- Reduction of</li> </ul>

		relations of the company or application of new organizational methods.	Supplies. - Significant improvement of working conditions. - Improvement in communications and interactions between the different units of business. - Increased knowledge transfer with others Organizations. - Increased ability to adapt to changes in customer demand. - Increase in the efficiency or speed of the supply chain / distribution and / or shipment of goods and services. - Development of new methods of relationship with customers and/or suppliers - Development of new capabilities that impact the business model in a differentiating way.
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### UNCERTAINTY ASSOCIATED WITH DEVELOPMENT PROJECTS BASED ON NEW KNOWLEDGE

Organizations tend to control with some accuracy the projects in which they are involved due to the uncertainty surrounding them. This suspicion of failure can drive away successful projects. Uncertainty refers to a situation in which the probability function is not known, of course, its characteristics are ignored, the starting point of this way of approaching the situation is through the simulation of scenarios in opposite or alternate positions or attitudes. Segger et al. [9] tells us that Projects are linked to the variables of the environment, and ultimately have external relationships that affect their complexity. The greater the number of variables, the criticality and the internal complexity of such relationships, the greater the possibility that this external environment affects the elements, amplifying the complexity of the system and its uncertainty.

Innovating requires creating something new, which brings with it risks and uncertainty. An innovative decision-making organization requires knowing how to calculate and assess risks and uncertainty [10]. Nowadays it is usual for organizations to integrate improvements in their infrastructure, both administrative, operational, technological, among others; in order to provide functionality to the processes that are involved, since they are the key to being able to measure efficient and effective performance.

At the time of involving innovation, cultural, institutional, environmental and productive components must be considered, which are in accordance with the project, recognizing in each aspect the real requirements, starting from a formal research base, added to the experience acquired by the knowledge relevant to the project to be managed. In this sense, the incorporation of innovation in project management proposes a series of factors, which provide a useful framework for its development, among them are:

#### *I. Strategic dimension*

Drazin and Schoonhoven [11] propose an integrated model on the effects of context on innovation and highlight the strategic approach of the organization as the main factor in the innovation process. It addresses the objectives and scope of the innovation strategy after the self-diagnosis of the organization.

It is, therefore, from the strategic perspective of determining the key role in the articulation of the strategic vision of the organization, its resources and capabilities, as well as the alignment of the company with the environment.

#### *II. Identification of ideas to develop*

The identification of ideas to develop is based on the economic needs of the population under study; it is usually about: "taking advantage of an opportunity, that is, because they found an unmet need or an underserved market niche, or because they have a good idea and want to develop it for the pleasure of seeing it come true" [12].

There are many techniques and practices to identify and generate new opportunities for innovation. These include creativity, design and product development techniques based on the creative capabilities of people and systems for detecting opportunities and threats in the environment derived from technological surveillance, benchmarking and competitive intelligence systems.

### *III. Project development*

Stage in which innovative initiatives are launched. Innovation projects have very particular characteristics: incomplete definition of some aspects, uncertainties regarding the results, deadlines higher than usual in conventional projects, among others. Therefore, it is necessary to establish management systems adapted to the needs of this type of project.

Projects are planned change efforts, so they start with the manifest need to change something and end when that change has occurred. Although it is easier to mark the beginning and end of a project than a change, however, efforts to manage that change occur at the same time as efforts to manage the project[13].

### *IV. Protection of results*

Innovation generates competitive advantages that differentiate us in the market and, through innovation management, these advantages can be available for as long as possible. The mechanisms of protection of research results allow to guarantee the obtaining of the greatest possible number of benefits resulting from the innovation and also the implementation of business strategies to explore and monetize those results. Based on the innovation management process, the adoption of knowledge generation, conservation and management systems in the organization, we can identify how and when useful knowledge is generated for the business and the existing systematics to integrate it into the practices of the organization [14].

### *V. Financing innovation*

The financing of project management and innovation is a decisive aspect for most companies, where there are high risks and it is even possible that such financing is not within the scope of the possibilities of these companies. In order to deal with this problem, the different Administrations offer various possibilities in order to finance innovative actions [14].

### *VI. The exploitation of innovation*

The impact that an innovation project may cause must be previously analyzed, both from the commercial point of view and from the point of view of improving the competitive position of the company. Innovation only makes sense if you expect to obtain a quantifiable economic benefit from it. It should be borne in mind that there may be occasions when the exploitation of innovation results may require a change in the business model [15].

### *VII. Generation, conservation and management of knowledge in the company*

In order for the organization to distinguish itself from the competition, we must be able to manage and promote the knowledge generated and existing, in order to be a determining factor [14].

## **AXES THAT MOTIVATE AND INSPIRE THE MANAGEMENT OF INNOVATIVE PROJECTS**

When we talk about a project manager, we find a broad term that can encompass a variety of tasks and mean different things to different people. A project manager is the person who is responsible for correctly supervising a project from its inception to its conclusion. The work responsibilities of such a person can range from project planning to the creation of a program and a schedule, as well as the execution of each phase, budget management, the liaison function between all stakeholders, troubleshooting and maintenance. Therefore, the project manager must be very organized and thorough, in addition to having an excellent gift of people; as, he is responsible for leading the team and communicating clearly and periodically with all relevant parties.

Taking into account that the project manager is a change agent, someone who executes the objectives of the project and uses their skills and experience to influence a shared goal within the project team. In other words, project managers are leaders, who not only seek to ensure that projects are executed and delivered on time and without going over budget, but they engage and encourage their teams and inspire their clients. A strong critical thinking ability is required to solve problems as the project

progresses, while also possessing thorough communication skills (think: a gift for customer service) in order to ensure that everyone is informed, motivated and engaged.

The project manager must be able to handle or master the following axes:

- *The art of directing.* The ability of managers to guide and direct the direction of organizations, as a discipline within the millenary art of strategy, seeking constant competitive advantages and opportunities, to which other states of the art can be added, such as the leadership of people and teams for talent management. One of the most important strategic resources of organizations is the recognition of talent as a factor that sustains competitive and comparative advantages that differentiate against the competition [19].
- *The organizational capacity to be adaptive and agile.* Two factors that contribute to organizations to achieve competitive and comparative advantages are the agility and adaptability that it has. The above in order to have a better understanding of different dimensions and organizational variables (project, strategy, structure, culture, talent) that impact on the capabilities of companies to be able to respond faster to changes and challenges in the environment [20].
- *Direction and management.* Every company is born as a project, but with the passage of time and with the beginning of its ordinary, repetitive and recurrent activities it ceases to be so. Project management is an art and methodology that can be applied to any project, having an approach to it through an internationally recognized methodology, which teaches us to standardize the work of direction in the different aspects of management that are relevant to a project, such as integration, scope, costs, time (time), quality, human resources, risks, communications, procurement, stakeholders, among others [21].
- *The art of being innovative.* One of the constituent factors that generates competitive advantages in companies is Innovation. This means not creating a new function in the company but going further, creating a new culture that reaches all members of the organization, where leaders and leaders responsible for projects are co-participants in the innovation processes, through strategies, methods, methodologies and use of tools, for the design and development of new business models, projects, and products and/or services [22].

## CONCLUSIONS

Support the way of doing business in our days, sharing with our people the responsibility of continuous improvement in productivity and quality, as an indispensable part of a job well done. On the other hand, we must be able to recover the value of the trade and the pride of doing things well, and this is not really difficult to achieve, given that many people in our environment are willing to do so.

Project management is a key factor for any organization and more when it is done in an adequate and efficient way to manage innovative projects, through methodologies and processes that are part of the management that allow the innovation manager to reduce uncertainty, applying techniques already successfully tested.

Excellent project management matters because success is sought, by creating and enabling happy, motivated teams that know their work affairs, so they do the best they can. And innovation is the process of turning ideas into new or improved products or services, which bring performance to the market and benefits to the company object of the innovative process.

While project management contributes enormously to ensuring a judicious and efficient use of resources, resorting to the creativity of the members of each team to organize their activities, structure their organization and solve their problems is undoubtedly the main element that will determine the level of success achieved by the project under their tutelage. Pending that this book meets the objective of presenting some methodologies of project management and administration.

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