

## Project management in Morocco: Impact of COVID-19

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**ABSTRACT:** According to (PMI 2016), \$220 million was lost in 2016 due to poor project performance, a 12% increase over 2015. This is strongly related to the profile of the project pilot. The purpose of this article is to study and analyse the different styles of project management and its evolution over time, according to the vision of MIDLER 1996, which groups them into four models: Entrepreneur, Engineering, Taylorian and concurrent.

Our article also gives a historical view of the project management by trying to name and characterize the major stages and to understand the main levers of development and diffusion.

To do this, our research is based on a survey aimed at managers of Moroccan organizations of different sizes, this work enabled us to implement the project management style most adopted by project managers and to define the criteria for choosing the most appointed project managers. Finally, our article investigated the impact of the health crisis on the economic activity of these organizations and on how to manage projects during the pandemic period.

**KEYWORDS:** Project management, Entrepreneurial, Engineering, Taylorian, concurrent and Covid-19.

### 1 INTRODUCTION

To ensure its development, every organization must implement a strategy. Depending on their stages of maturity and available resources, organizations implement internal projects or outsource them [1], [2], [3].

A project is a temporary organization, which is structured to perform a set of activities to create a unique outcome with limited resources and a predetermined beginning and end [4].

Since its beginnings in the 1940s, project management has been evolved to become one of the main international and interdisciplinary applications.

The relevant professional bodies (the International Project Management Association and the Institute of Project Management) operate globally and in most fields. Project management practices and procedures apply to a wide range of applications. Project management is perhaps the world's first truly international area of professional practice.

Although project management (PM), as a unique form of leadership, is considered as the most important achievement of the last decades, it doesn't mean that humanity has never carried out projects before. In fact, there are many cases of major projects dating back thousands of years. The ancient Egyptian pyramids were built about 4000 years ago and the Roman road network across Europe and North Africa is about 2000 years old. If the ancient Egyptians and Romans had such important projects, why didn't they need formal project management tools and techniques? The answer is related to complexity. The pyramids and Roman roads were big but essentially simple. The project mode appeared at the outset of humanity.

More recently, people have continued to develop large projects, but these projects have become much more complex. A modern engineering project, such as the construction of a new suspension bridge, usually must be carried out under a series of restrictions that did not apply to the ancient Egyptians and Romans. Such projects usually have a strict cost limit and a specified maximum completion date. They must be designed and built in accordance with numerous safety, health, and environmental restrictions.

Project management has now become a recognized methodology for project-based activities. Over the past 40 years, PM has become an independent discipline and a particular field of professional activity in a market economy.

The objective of our article is to define PM, trying to understand whether Moroccan companies in their project management respect and follow a predefined management model and to study the impact of the current health crisis on this management. In order to attain this academic aim, we asked the following research questions:

1. Does project management require a mastery of the PM and its tools by the entrepreneur?
2. Which the management modest is most recognised and approved by Moroccan organizations?
3. What is the impact of the current health crisis (COVID-19) on the management of Moroccan projects?

To obtain answers to these research questions, we conducted a survey of management practitioners in Moroccan companies of different sizes and sectors. We targeted 325 companies. Using a well-designed and a purposeful questionnaire. therefore, we received 143 complete responses.

First of all, we shall start from the literature on management in order to frame its historical evolution, and to derive a definition of the PM. Then we will mention the four management models pointed out by (Midler, 1996). Afterwards, we will then discuss and analyse the outcomes of our case study.

## **2 DEFINITION AND HISTORICAL DEVELOPMENT**

### **2.1 DEFINITION: PROJECT MANAGEMENT (PM)**

A review of articles published from 1986 to 2004 in the International Journal of Project Management and the Project Management Journal found 30 articles on the success of a project [5]. It found out that there is no consensus on the definition of project success. Failure often refers to "the halting of an initiative to create value that has not achieved its objectives" [6], [7], [8].

Since project management is a relatively new discipline, it is not surprising that many definitions of it coexist.

According to [9]: PM was only officially recognized as a field in 1950, and it was not until the 1970s that it was considered as a trade, although several researchers mention that the origin of PM is the Pharaohs with the construction of the pyramids. There are several definitions of PM in the literature, for example, according to [10]. The PM is "Planning, organizing, monitoring, controlling and reporting on all aspects of a project and motivating the people involved to achieve the objectives of the project" [10]. Project management is the art of directing and coordinating human and material resources throughout the whole life of a project, using management techniques to achieve predefined objectives, content, cost, deadline, quality and stakeholder satisfaction [11]. For its part, the PMI (Project Management Institute) defines project management as "the application of knowledge, skills, tools and techniques to project activities to meet project requirements" [12]. PM is also defined as the use of knowledge, skills, tools and techniques in project activities to meet or satisfy stakeholder requirements and expectations for a project [13]. In this context, PM can be defined as an activity aiming at executing or planning assigned tasks, implementing certain plans, using available resources (time, capital, people and techniques), in order to satisfy requirements as well as to achieve the already set objectives [14].

### **2.2 THE HISTORY OF PROJECT MANAGEMENT**

The individual aspects of what we now call project management were characteristics of the ancient human enterprise. One known example is the ancient Egyptian pyramids, that were developed about thousand years ago without highly developed technology. The network of Roman roads that developed about two thousand years ago, stretching from the Euphrates to Scotland. Many of these roads still exist, and much of today's European road network is strongly influenced by the Roman roads. The pyramids and the Roman roads were incredible projects in their time. The Roman roads were part of a network that was worked on for hundreds of years and involved hundreds of thousands of slaves and paid workers.

The question that arises is how could such important projects have been carried out without the use of project management methods?

The main reason is the lack of complexity. The pyramids and Roman roads were big projects, but the processes used were relatively simple, even though they involved enormous effort and great ingenuity and innovation.

The second reason is the importance of project duration. A project lasts as long as it takes. The relationship to time is not the same as it is today.

Project management is a methodological approach that was introduced structurally in the company during the middle of the 20th century to bring big projects to a successful ending. It is acknowledged that its origin go back to the Italian Renaissance and that it has been continuously enriched and adapted to the economic and technological realities [13].

"It's a long way from project to thing. " Molière

Very few authors deal with the evolution of project management. Certainly, the scholarly literature refers, here and there, to some of its components, but very rarely to the "process" or the "life cycle". Many organizations use project management methods, tools and techniques and principles to manage their day-to-day operations without necessarily claiming to be "project managers". Indeed, organizations, especially those operating in the private sector, have been trying to increase their productivity and, conversely, reduce their operating costs.

Table 1 summarizes the big steps in the history of project management:

**Table 1. History of project management**

The phase	The period	characteristics
The framework of so-called "functional" organizations	From 1950 to 1960	The project passes successively through specialized departments at each stage of the product life cycle. There is no formalized approach or project actors.
Formalization of the "standard model" for big engineering projects	From 1960 to 1980	Development of the concept of project management in mass production industries. Project management will be formalized in the form of an autonomous body of doctrine for big military or space programs and major development works. Project Management Institute. At the end of the 1980s, a new breakthrough. New approaches to project management emerge, giving greater weight to the project manager, now called "project director".
Development of quality standards or criteria	From 1980 to 2000	The era of product-codes (of the "look"). Organizations improve their operations, products or services, customer service, etc. This is the "ISO" era
The globalization of markets and the restructuring of economies.	From 2000 to ...	Access to a considerable number of products, all over the world, thanks to the use, in particular, of computer networks. The terms "effectiveness" and "efficiency". Project management today applies to a range of activities, in a variety of ways and at different levels.

**3 PROJECT MANAGEMENT MODELS ACCORDING TO MIDLER**

In order to define these big stages of evolution, there are several authors in the literature who have cited these stages, for example [16]-[17] who, for his part, has graduated the modern history of project management into two degrees: "degree zero" which, at the beginning of the 20th century, autonomises project management and "degree one" which, in the second half of the 20th century, rationalises it and defines it as a standard model [18].

Historical analysis has shown that project management has been forged in a variety of professional contexts (in particular, big unitary projects and manufacturing companies). Current project management activity is centred on four trends, where transfers between professional traditions are taking place.

The development of the project function; the implementation of concurrent engineering methodologies; the development of new telematic tools for communication and cooperation; the development of original forms of contractualisation [19]. For this reason, in our article we will base ourselves on the identification of (Midler, 1996) who has indicated four management models, which have, roughly speaking, succeeded each other over time: (The entrepreneurial model, the standard project or engineering model, the Taylorian or sequential project management model, and the concurrent engineering (CE) model.

### 3.1 THE ENTREPRENEURIAL MODEL

Founded by [20], it is the dominant form of industrial development in the 19th and 20th centuries. In this model, the choice of the project and the important decisions are made by the founder (the entrepreneur) and based on his charisma and interpersonal relationships. The entrepreneur is the main decision-making centre of the company, in the sense that he manages the entire productive process, not because of an ahistoric pre-eminence of capital ownership, but because he is the agent who holds the rarest factor [21]. "The project can be identified with the birth and development of a company borne by the figure of its founder. Cooperation here is based less on instrumental processes than on trust, charisma and interpersonal networks" [22]. According to [23]. "The key figure in the model is the entrepreneur, the creator of the product, the founder of the enterprise, who brings together in his person the technical competence, the social competence of the animation of the innovative cooperation and personally assumes the economic risk". The fundamental economic mechanism of this model is that the entrepreneur owns the rights to exploit the products or services in the future.

### 3.2 THE ENGINEERING MODEL

This model was formalised in the United States at the end of the 1960s. The main actor in the formalisation of this model is the professional association Project Management Institute (PMI), with the appearance of the big programmes: military, and the big development aid works. Following the creation of bodies such as the PMI, AFITEP and AFNOR, which provided project management with tools deemed successful at the time, such as: LE PERT for project scheduling, LE GANTT for project task planning [24]. Managing engineering projects leads to the standardisation of instruments, procedures and actors and sets itself up as a compliant model. "Project management is formalised and contractualised through tools that the PMI itself has helped to standardise and disseminate by standardising processes and certifying project managers: breakdown of the project into tasks, planning methods, functional analysis, cost and risk control tools" [22]. According to [19]. "The engineering model introduces, in terms of the economic mechanism, a break with the capitalist entrepreneurial model. Its starting point is indeed the dissociation between the project owner, who assumes the risk of operating the project, and the project manager, who assumes the risk of carrying out the project". But for the first model, the contractor takes the two risks of operating and carrying out the project on his own.

### 3.3 THE TAYLORIAN OR SEQUENTIAL MODEL OF PROJECT MANAGEMENT

A large number of new products, specifically manufactured goods, have appeared in big companies, following the reason of modernisation of existing product ranges. Their design processes have escaped from the reasoning of the two previous models. According to [19]. The organisation of this model is based on three characteristics:

- An integration within the company of most of the expertise required for design. These designers are paid by salary, unlike the contractor and engineering model.
- A logic of specialisation of trade expertise (with, in particular, the Taylorian separation between design and execution of activities)
- Design is coordinated by procedures. The interventions of the different trades are sequential according to a typical linear staking out. Interface problems between different functions are managed by hierarchical arbitration.

According to [22], This coordination of activity is sequential, with each trade intervening successively in the execution of the project.

Project management mobilises tools and methods to guarantee the company's performance in terms of cost, deadlines and quality [24]. Faced with a requirement for speed of development and regular renewal of projects, thus, this model is practically inoperative.

### 3.4 THE CONCURRENT ENGINEERING (CE) MODEL

The emergence of new products and services towards the end of the 1980s implemented CE. The shift to CE requires a well-defined and structured change methodology that guides the company through the change process [25]. In turn, the complexity of the business system, in which decisions have to be made by interdisciplinary groups with different methods and needs, requires the use of models. A model describes what the system does, what controls its operation, the objects it acts on, the means it uses and what it produces. Thus, the first task that a company should consider when implementing CE is to obtain a model of its current design and manufacturing process, determining where the different departments of the company come into play and how they are linked [26]. To illustrate this model, in which each team member progresses at the same time as the others, several authors use the metaphor 'the rugby run', knowing that many combinations remain possible [27]. An exhaustive study of the different information that arrives and is disseminated in the company, when creating a new product, will be vital in the transformation and subsequent adaptation to the new CE philosophy.

Next, you need to determine the state you want to reach: new competitive practices using, mainly, computer-aided design and manufacturing tools and incorporating a product data management system [28].

Finally, strategy and tactics must be developed to bring about the desired change. For this purpose, it should be borne in mind that the implementation of Competitive Engineering should be carried out step by step, with an emphasis on changing the corporate culture through a deep knowledge of the product development process [29].

These four management models mentioned by Midler can be summarised in the following table:

*Table 2. Models of project management (MPM) according to Midler 1996*

MPM	Description	Authors
The entrepreneurial model	(the choice of the project and the important decisions are made by the founder and based on his charisma and these interpersonal relationships: "ownership of exploitation rights")	[13], [18], [20], [23], [21], [22]
The Project Management Institute (PMI) standard model. (engineering)	breakdown of the project into tasks, planning methods, functional analysis, cost and risk control tools	[18], [22], [27], [30]
The Taylorian or sequential model of project management	(you divide the project into elementary sub-tasks by defining well-defined criteria for each task to be followed)	[18], [22], [24], [27], [30]
The concurrent engineering (CE) model	(the various tasks of the project are carried out in parallel and simultaneously, during which each stage starts when the previous one is fully completed)	[18], [22], [27], [30]

#### 4 IMPACT OF THE PANDEMIC ON THE MOROCCAN ECONOMY

The severity of the coronavirus pandemic has prompted governments in more than 200 countries around the world to take drastic preventive measures, to the detriment of their economies. The impact of the pandemic on the global economy could be between \$2,000 and \$4,100 billion, or 2.3% to 4.8% of global GDP, the Asian Development Bank (ADB) said. As for the International Monetary Fund (IMF), it qualifies this crisis as the worst since the big depression of 1929. World stock markets collapsed in March, the price of a barrel of oil fell into negative territory for the first time in history, and unemployment rate is soaring worldwide.

The Office of the High Commissioner for Planning, the United Nations System in Morocco and the World Bank have jointly developed a "Strategic Note" to deepen the understanding of the socio-economic impact of the Covid-19 pandemic in Morocco, which emanates from the economic collapse, particularly in Europe, the country's main trading partner, combined with the negative effects of the containment measures established in Morocco to deal with the spread of the virus.

The Moroccan economy is expected to experience a recession throughout 2020, the first in more than two decades, due to the combined effects of drought and the pandemic. The note recalls the importance for national economic policies to preserve employment and promote inclusion in national socio-economic integration programmes. Also, according to the note, macroeconomic measures and multilateral collaborations should be emphasized as the current crisis is transnational.

#### 5 METHODOLOGICAL FRAMEWORK AND ANALYSIS MODEL

##### 5.1 METHODOLOGICAL APPROACH OF THE STUDY

In this part, it seems necessary to recall the problematic as follows research questions. Based on MILDERS' work and its classification of project management models, and with the aim of taking the research out of the field and applying it to concrete field conditions, and in order to describe a profiling of project management models in Morocco, we will focus our efforts at the project manager level rather than at the level of the entire company. For as the PMI signals in its 2016 annual report, project performance is strongly related to the profit of the project pilot.

Our research questions, as already mentioned, focus on the impact of the current health crisis on the management of Moroccan companies, the importance of PM tools for project management and the profiling of the most adopted project management model in Morocco, which helps entrepreneurs and decision-makers in the organization to put their finger on the real axes of project performance. This led us to make the following hypothesis: The management model depends on the size of the company.

Our research is part of an exploratory quantitative and descriptive approach. To answer our research questions, the questionnaire is the chosen data collection tool. Through a method of direct and online administration to a sample of 325 companies, these questionnaires were sent to project management practitioners. We were able to retrieve 143 responses from companies of different sizes.

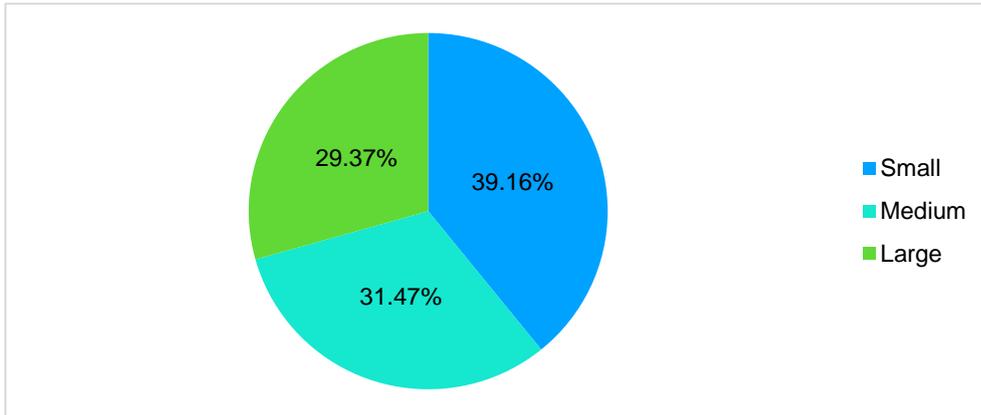
The objective is to understand the different models of project management adopted by the sample of companies participating in our questionnaire.

**5.2 RESULTS AND DISCUSSION**

**5.2.1 COMPANY SIZE**

This part is devoted to the presentation of the survey’s results due to the comparison of theoretical and field data. It consists in answering our research questions.

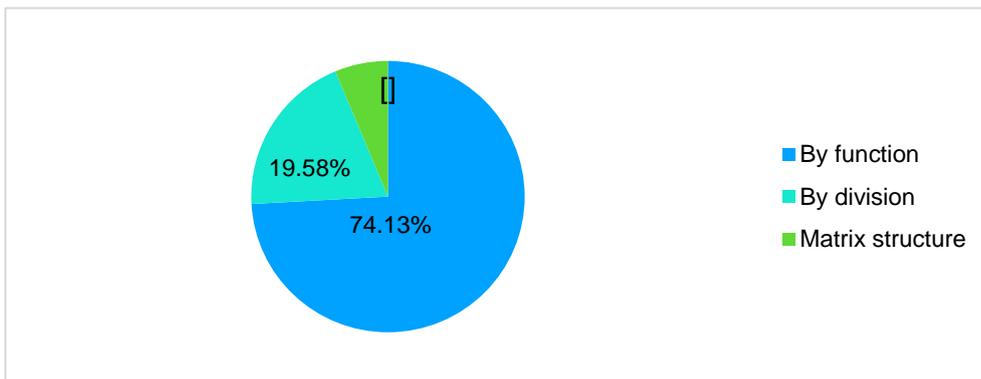
According to (graph 1). 39.16% small, 31.47% medium and 29.37% large.



*Graph 1: Sizes of the companies involved in our work*

**5.2.2 COMPANY STRUCTURE**

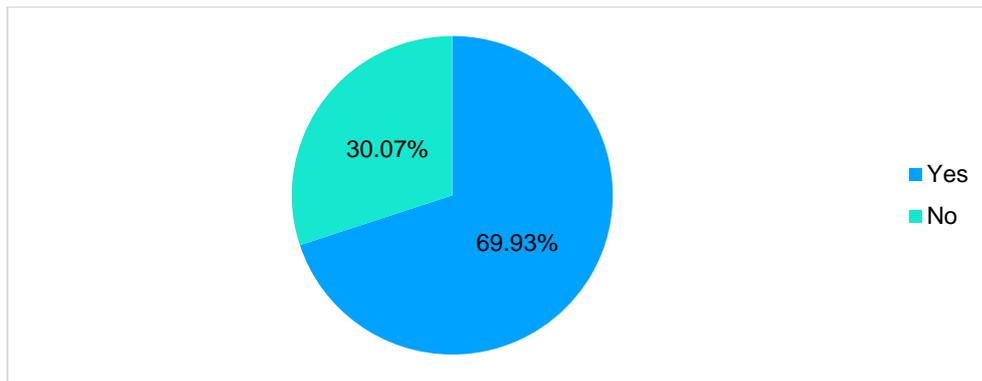
The companies surveyed opt for a structure by function 74.13%, to organize their organizational chart, followed by a structure by division which represents 19.58%, of the companies surveyed, in last position is the matrix structure 6.29%, (graph 2). The structure by function gives each head of department authority over his subordinates within the limits of his own function. This structure allows a better quality of execution of tasks, which subsequently facilitates the role of project manager.



*Graph 2: Company structure*

**5.2.3 PRESENCE OR NOT OF A PROJECT MANAGER**

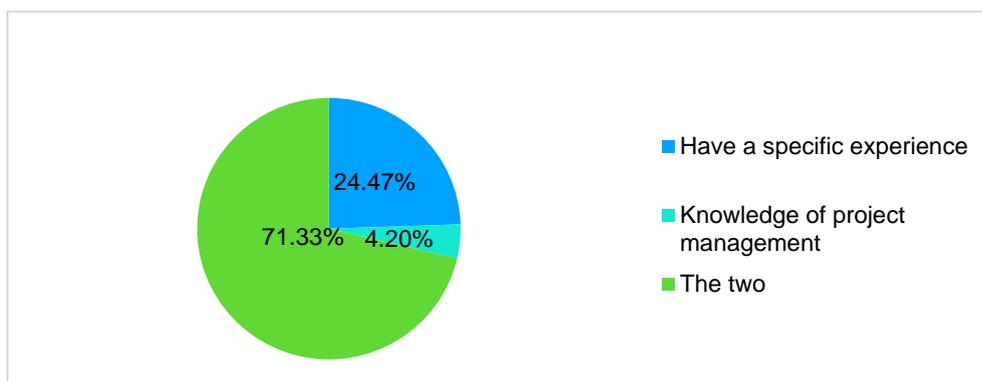
Graph 3 shows that 69.93% of the companies, (mostly large and medium sized), have a project manager, which is consistent with the analysis of graph 1. On the other hand, 30.07% of the companies surveyed (mostly small companies) do not have a project manager position. This gives us an idea of the importance of the project manager.



Graph 3: Existence of a manager within companies

5.2.4 CRITERIA FOR CHOOSING A PROJECT MANAGER

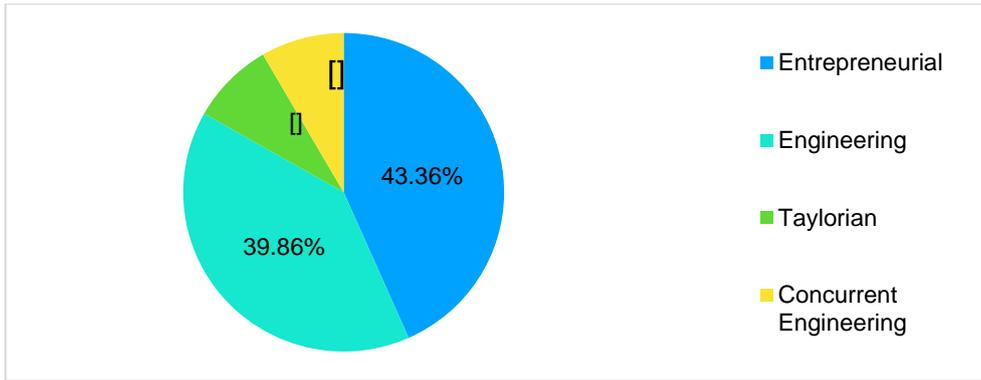
Our work has allowed us to highlight that the couple (knowledge, experience) is a couple that plays a very important role in the choice of the project manager (graph 4). The graph shows that more than 71.33% consider that knowledge and specific experience in the field are two essential criteria for the choice of a project management manager. 24.47% of the companies questioned considered experience in the field of project management to be the main criterion for choosing a project manager. While 4.2% chose knowledge as a selection criterion.



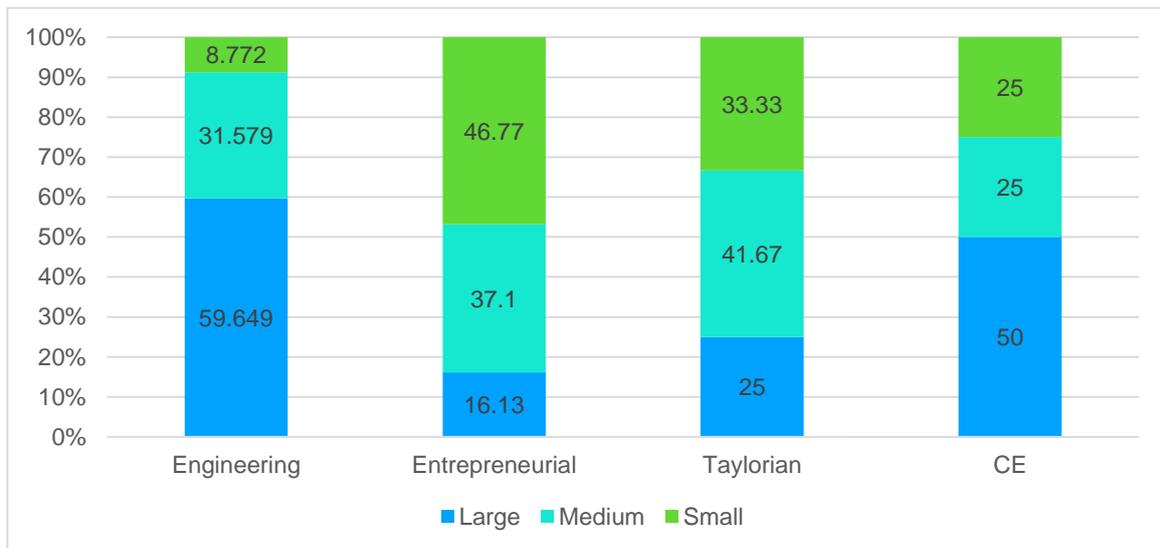
Graph 4: Criteria for choosing a project manager

5.2.5 BUSINESS MODELS

We can deduce that the management models that dominate, from the point of view of Moroccan managers are: The entrepreneurial model, which represents 43.36% (graph 5) of the companies questioned. According to (graphs 6), (10 large, 23 medium and 29 small). The second management model is the standard management model (engineering) with a percentage of 39.86%, of which 34 are large, 18 are medium and 5 are small (graphs 5 and 6). This shows that practitioners of project management in big companies prefer to manage their projects by making a global study of a project under these aspects, technical, economic and financial, which allows it to be broken down into tasks to facilitate the control of costs and risks. On the other hand, medium and small companies opt for a management model that allows the founder alone to make the major decisions.



Graph 5: Management models

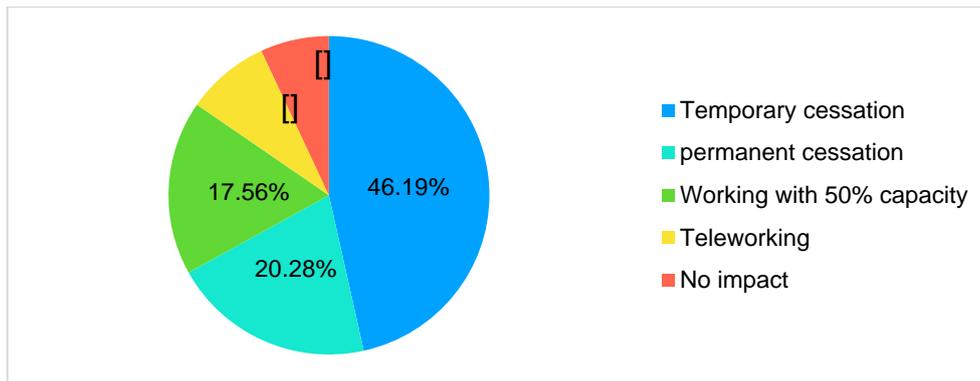


Graph 6: Size distribution according to the chosen model

5.2.6 THE IMPACT OF THE HEALTH CRISIS

The current health crisis (COVID-19) has caused a severe a harm to the Moroccan economy situation and will bring aboutdestructive consequences that will be felt for several years to come.

Entire sectors have been strongly affected (93% of companies surveyed, graph 7). These are mainly the tourism sector, the automotive industry, transport and logistics, crafts, trade and services. According to our research among Moroccan companies, 46.19%, 20.28% respectively of projects in temporary or permanent cessation especially for small and medium enterprises. On the other hand, companies operating in food processing, textiles and industry (26.57% graph 7) would have resisted better to the effect of the pandemic either by reducing the number of employees or by teleworking (telecommuting). On the other hand, the remaining 7% of companies did not have a negative effect on their activities.



**Graph 7: The Impact of COVID-19 on the Management of Moroccan Companies**

Our study showed us the importance of having a project manager: 69.93% of medium and big companies. This manager is chosen according to two essential criteria:

- Knowledge in relation to training and the development of knowledge of PM tools.
- The know-how, in relation to previous experiences in the field of PM.

This shows that managers of Moroccan companies are aware of the importance of PM tools for good project management in order to guarantee the continuity of their economic activity.

On the basis of the answers of the respondents, we can state that for our second research question, the most adopted project management models by Moroccan practitioners are: Entrepreneurship (43.36%) and engineering (39.86%)

- The first model is the entrepreneur with 43.36% of companies. It is practiced by 16.13% of big companies, 37.1% of medium and 46.77% of small companies.
- The second model is the engineering model with 39.86% of companies. It is practiced by 59.649% of big companies and 40.351% of SMEs (small and medium enterprises).
- The third model is the Taylorian model with 8.39% of companies. It is practiced by 25% of big companies and 75% of SMEs.
- The fourth model is the concurrent engineering (CI) model with 8.39% of companies. It is practiced by 50% of big companies and 50% of SMEs.

Generally speaking, big companies apply the engineering model and concurrent engineering. SMEs apply the entrepreneurial and Taylorian models.

## 6 CONCLUSION

The project management was structured in a progressive way (evolution by stages over time). Individual activities became contingent models. Even if the project mode appeared at the birth of mankind, the PM did not have a specific status, and only became a management model in the 1950s and 1960s. In this period, it became autonomous and standardized, especially since common concerns in engineering project management are perceived as more important than sectoral differences. The most important clients, who see this as a source of rationalization of their efforts, have largely encouraged the standardization of practices. Concurrent engineering provided a high-performance management model for new product development projects.

Then, following our bibliographical and field work, we observed that the project management model varies from one company to another. We also know that this model depends on the size of the company. This validates our research hypothesis: The variation of the management model is related to the size of the company.

Our empirical work has also shown us that there are two essential criteria for choosing project managers: knowledge, i.e. knowledge of PM tools, and know-how, i.e. significant experience in this field (research question 1).

Then 41.3% of the medium and big companies questioned mentioned that they adopt the engineering model which consists of breaking down projects into sub-tasks to facilitate planning and cost and risk control tools (research question 2). On the other hand, 40% of medium and small companies apply a model where the choice of the project and the important decisions are made by the founder, the entrepreneurial model.

Finally, 93% of the companies have been affected by the current health crisis, of which 46.15% have had a partial cessation of activity, 20.28% a total cessation, 18.18% have had a 50% drop in their production and 8.39% of the companies have opted for teleworking (research question 3). It should be pointed out that we are in a fairly advanced stage of the crisis, and visibility is still unclear, which leads to wonder about the future of the Moroccan economy and the competent policies to reshape the most impacted sectors [30].

The research conducted on the application of project management models in Moroccan companies has given a big interest to the knowledge of PM tools and their manipulation within the organization, which are important elements for planning future projects. Indeed, the Moroccan company has become more professional through the new method of organized work. It is then a modern and computerized administration that presents a quality service to customers.

Consequently, business leaders are led to evolve the model of project management so that it is truly integrated and better deployed on the different departments of the company, and this for effective project management.

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