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CORPORATE PROJECT MANAGEMENT FRAMEWORK: A HIGHER EDUCATION  
APPROACH

PATRÍCIA SOFIA SOUSA PINTO | # 2032

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Professor Paulo Faroleiro

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## **Abstract**

Project management is a growing area, proven to be successful in several industries. This success, led by the implementation of project management practices in a combined framework has been studied along time. However, despite the increase of its acceptance as a profession and the several research done on the topic, many industries still lack project management practices. This is the case of Universities, where risk management, quality management, leadership characteristics and stakeholder management are examples of critical knowledge areas found as essential to be integrated. This work consisted in responding to the need of integrating the mentioned practices, by developing a framework using as a basis the *Guide to the Project Management Body of Knowledge*. After the analysis of the several research done on the topic, the result consists in a framework that presents guidelines by the different process groups as well as the outputs for each step. A more complete description on the steps to be taken and an output is provided for the essential activities, namely the stakeholder register, project charter, risk management plan and performing a change request, as well as a schedule plan and cost plan document. This serves as a basis for any project managed and can be adapted to each University so that it can be implemented in the future.

Keywords: project management, higher education, framework, tool

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## **1. Introduction**

Project Management is an area that has been growing, as work has been standardized in many areas such as the construction and healthcare institutions (Schwalbe, 2013). Never has it been so important to define it as it is now, since it is been accepted as a profession. *A Guide to Project Management Body of Knowledge (PMBOK)* (PMI, 2013) gives guidelines for managing projects in general, but what is actually a Project Management Framework? It is composed by elements such as tools and templates used by management teams in order to go through the five project management processes (initiation, planning, executing, monitoring and control, closing) (McConnell, 2010).

In Higher Education, there is evidence that the adoption of project management is slower (Kraleovich, 2008) and a consensus regarding the fact that the management of projects developed do not pursue a formal structure (Da, Moutinho and Kniess 2012), besides lacking leadership. To complement, a PMO is needed to help in the existence of it, with its tools and techniques (Kerzner, 2009), since there are no specific techniques or structure for Universities (Austin, 2002).

This lack of structure is related to the focus of Universities in research and teaching, as well as the perception regarding project governance taking attention from the core functions such as teaching (Scheurmann et al, 2013).

Research has been done regarding Higher Education institutions and how they need project management, as well as the leadership characteristics that are important to complement the knowledge on the area that is also fundamental (Gomes and Yasin, 2013). It is also recognized that the development of project management methods that are tailored to Universities and risk factors is necessary for a greater success in research projects in terms of time and budget objectives (Moore and Shangraw, 2011). In this sense, the need to test a tailored framework to Universities was observed, being the focus of this work. Using the

needs observed in previous research and adapting the knowledge areas that PMBOK Guide addresses, that make sense to be applied to Universities and how to apply them, a framework was developed following the structure of the process groups. It took into consideration the study of and best practices for the knowledge areas that are considered critical to project success in Higher Education, to serve as a basis for further research and to be able to be adapted to each University when managing projects.

## **2. Literature Review**

### **2.1. Project Management General Aspects**

Project Management is currently successful in construction and healthcare industries (Schwalbe, 2013) due to the increase in its implementation and usage. Yet it is still lacking in Higher Education due to factors such as resource constraints, competing interests and the lack of need for efficiency (Austin et al. 2013). We seem to be advancing to the implementation of project management in University Research through the application of some frameworks, with coordination and reporting activities, but there are still missing tools (Fowler et al. 2015); and very little is applied to all kinds of University projects. This coordination of different tasks in an efficient way is named as standardization. This concept has been studied in a wider sense (Mintzberg, 1983) considering standardization of work processes, outputs, skills and knowledge, which is used by institutions that build projects. We have been observing an emergence of project management in the sense that more careers are being created on it, as well as organizations, and there has been an increase in the way of organizing work as more project-based (Holzle, 2010).

There is evidence that having a standard project management methodology is important to increase stakeholder acceptance (Greene, 2010) so that they feel more secure and involved, which is linked to communication - one of the main attributes considered as necessary (Chow and Cao, 2008). To complement this idea, research states that everyone should be involved in

the project to share experience, since decisions are of no comprehensive understanding if they are not involved, and can have severe consequences in an agile methodology (Moe, Aurum, and Dybå 2012). Processes and procedures should be documented if they include milestone plans and tasks (Boehm, 2002). Besides, monitoring should be continuous, as it is important to control the work and measure it (Ravesteyn and Batenburg, 2010).

It is also proven that it is important to define clearly who the project manager is, so that responsibilities can be assigned and resources managed. Equally important is to be able to plan, which is a critical phase and where very little time is spent, leading to chaos in projects (Wamsley, 2009). Research proves that managing change aligned with project management, to answer to challenges is of great importance; and that this can be done with higher success combining Project Management with Benefits Management (Badewi 2015). Specifically, this includes not focusing only on the time, cost and scope objectives. These limit an organization's view, so they should consider the project benefits, namely the customer (stakeholder) satisfaction with its related responsibilities and expectations.

### **2.1.1. Leadership Characteristics**

The PMBOK addresses the technical characteristics required for project managers to pursue, but investigations identify that leaders should possess soft-skills for projects to be successful (Sorcher and Brant, 2002). Technical skills are mainly essential for planning and controlling, such as the human resource management and communication management areas. What these authors mention is the alignment with an effective communication, vision on the project and capacity to influence and engage stakeholders, to more easily integrate processes. The problem lies in the lack of these soft skills, leading to project failures (Belzer, 2001). Belzer adds other skills such as team-building, decision-making and flexibility to the list so as to be able to better manage changes and arising conflicts.

An open-oriented approach, considered useful for an effective organization strategy to be implemented, which is required, addresses that human resources and leadership skills are to be used by leaders, besides their technical competencies (Zimmerer and Yasin, 1998); adding this way a relationship management approach to their role (Bourne, Lynda et al. 2004). They should also possess an understanding of the organizational structure and trust their own judgment (Geraldi et al, 2010) to manage successfully any unexpected event.

### **2.1.2. Risk Management**

Institutions do not use comprehensive strategic risk assessment for identifying risks to project success (Association of Governing Boards of Universities and Colleges, 2009) even though most of the people inquired agreed that risk management is a priority. This study also suggested that a periodic identification and assessment should be performed, but only aligned with information usage about the risks in decision-making, makes it more effective. There are a number of contributors to risk uncertainty, which include changing the project scope and owning a poor project definition, with unclear requirements, which lead to another major risk - schedule overruns (Myers et al. 1986).

The problem in this knowledge area stands on project managers perceiving risk management as an activity that creates extra work and expense. This creates the emergence of risks such as the initiation of projects with no clear requirements (June M. Verner and William M. Evanco 2005). Another risk factor mentioned in June's study is that projects are seen as standalone, with no lessons learned. This leads to the lack of analysis on the causes for success or failure of past projects, being difficult to improve future ones or hold best-practices.

### **2.1.3. Quality Management**

Even though it is difficult to determine whether a project is successful or not because of the different perceptions and the way of measuring not being clear (Pinto and Slevin, 1989); quality is one of the most important objectives for managers. Knowing the critical success and

failure factors, as well as the way to measure and control them helps achieve quality assurance (Belassi and Tukel 1996) by being able to eliminate the ones causing project failures and poor performance. To complement, Shenhar et al (2002) in its study mentions that a more project-specific approach should be adopted to identify them due to different factors affecting different kinds of projects. To more easily pursue a quality assurance and system, a continuous improvement environment aligned with the main stakeholders' commitment is important in educational and industrial institutions (Curry and Kadasah, 2003; Petrov, 2006).

#### **2.1.4. Stakeholder Management**

It is proven that stakeholders play an important role on project management success (Eden and Ackerman, 1998) meaning time should be spent on identifying, understanding and managing them (Burby, 2003). This is important, mainly due to 70 to 75 percent of organizational change efforts failing because they do not meet stakeholder expectations (O'Mahony and Garavan, 2012) even though the manager may meet time, cost and scope requirements. Stakeholders' relationships and their expectations' management were, this way, considered as a critical factor in the implementation process of projects (Chow and Chao, 2008), so emphasis should be placed on them. This emphasis is done through an effective communication strategy where their expectations are considered and aligned with the different project changes and updates.

#### **2.2. The specific case of Universities**

Universities have been emerging from being fragmented, to being integrated organizations (De Boer et al, 2007) with strong institutional management being a key component (Braun & Merrien, 1999). This makes project management, and more specifically, risk management, being analyzed as an instrument to apply (Huber, 2009); but with scarce specific cases of successful implementation (Sadri, Niemeyer, and Roman 2011).



Even though service quality is important in Higher Education, they face several implementation challenges (O'Neill and Palmer, 2004) due to the several external drivers for change regarding quality, and different stakeholder perceptions (Houston, 2004). For a successful quality management system implementation in Higher Education, it is proven that stakeholder involvement is a key factor (O'Mahony and Garavan, 2012), with the faculty, staff, students and alumni being considered as stakeholders. Besides, the involvement and commitment of the Higher Education leaders facilitates the process (Vora, 2002). The implementation of quality management is proved to be needed in Universities to obtain continuous improvement (Temponi, 2005) in education with feedback from the stakeholders so that programs can adapt to changes.

One of the projects Universities face, is the development of MBA programs, where research states that one of the main challenges is the improvement of the quality of education (Kalim and Siddiqi, 2010) with constant assessment needed to be performed for a total quality improvement. Authors also reveal the need to integrate and redesign the programs' curriculum with a constant feedback and communication with the involved stakeholders, allowing the reduction of the existing gaps.

A successful project management implementation inside a University which proved to bring positive outcomes is the case of the University of Arizona Libraries (Feeney and Sult, 2011) that aimed at the increase in efficiency. Examples of actions include a definition document with clear scope, schedule and resources and creating a work breakdown structure. They also engaged stakeholders with open-sessions where they could provide feedback and help in the definition of concepts and outputs. Finally, it is also mentioned that a project closeout meeting is performed to reflect for future projects and recognize achievements, allowing them to track which projects were critical and strategic.

Just as project management practices are needed for MBA programs and it was proven to be able to be able to implement them in university libraries; a need to study the way to apply and integrate these practices to University projects as a whole was discovered. This way, all kinds of projects can be included such as the development of IT software or even a more marketing-related project.

### **3. The Problem**

The research found states knowledge areas that are generally essential in projects, and more specific, critical in Higher Education institutions, as well as the fact that frameworks are essential nowadays to help manage projects. The problem lies in the fact that many Universities lack a framework with all the procedures and templates, as well as an established project management culture. To answer the question of how to integrate all the practices studied and knowledge areas to be applied in Universities, the idea of developing a suggestive framework that can be applied and adapted to these institutions when managing projects emerged. Some of the knowledge areas were found to be critical were mentioned in specific University projects, namely the MBA programs and library implementation case; also serving as guidelines on the important topics for this integrated framework.

### **4. Methodology**

The main objective here is to reach to a framework that can be applied to Universities and serve as a starting point for further researches as well as for adaptations made specifically to each higher education institution that desires to implement a project management process. As mentioned, the PMBOK served as basis for the structure, which is organized by the process groups referred in it. Every project goes through these processes in its lifecycle, regardless of the type of project, even though they may overlap between phases, and they must follow rules and procedures to achieve the outcomes successfully. It was also taken into account the fact that PMBOK focuses mainly on the hard skills, so in order to obtain a complete framework,

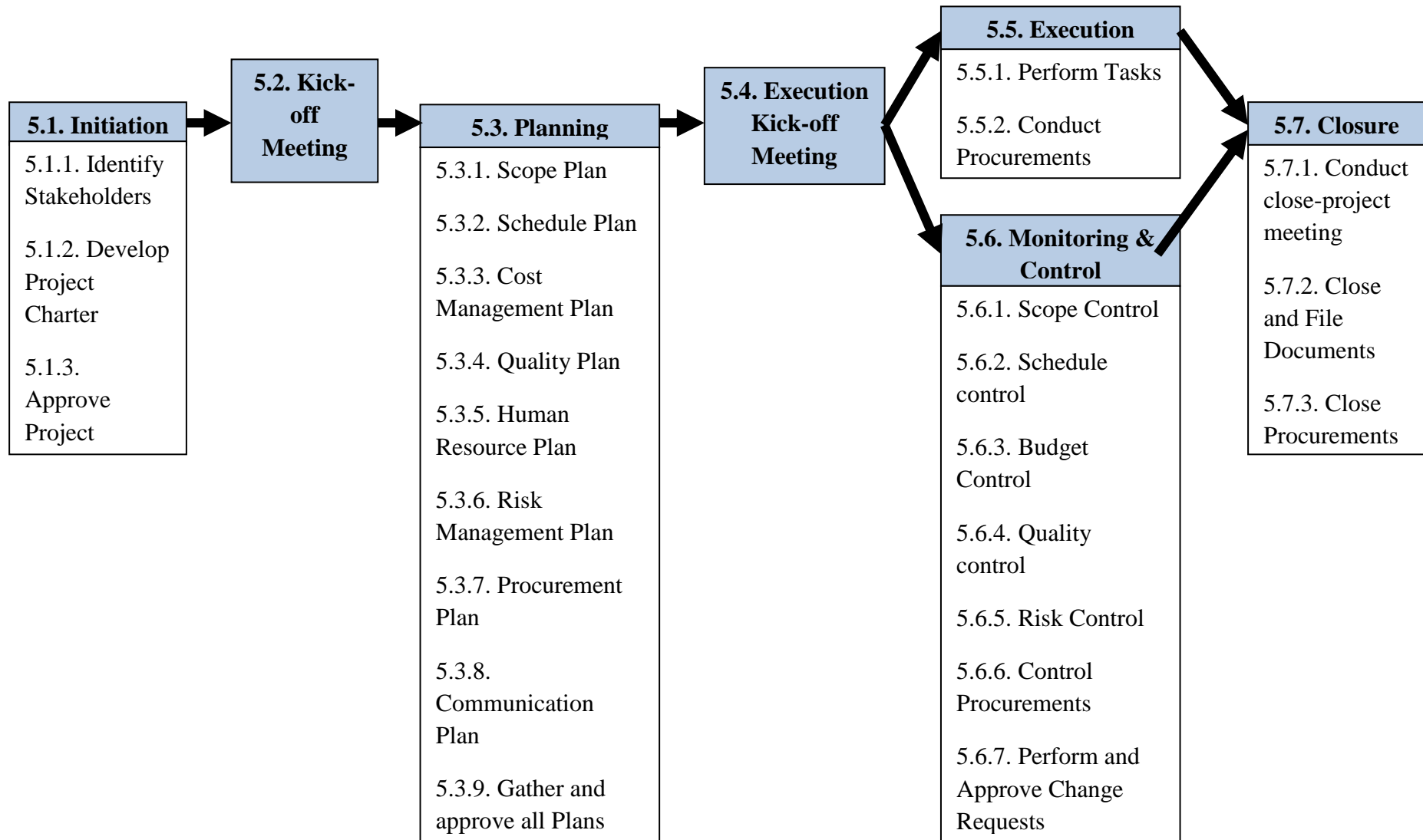
research found was used analyzed; and taken deeply into account not only for the necessary soft skills, but also to understand the most critical knowledge areas that need special focus in Higher Education institutions. These are the areas that normally lead to uncompleted projects or unsuccessful implementations.

Finally, feedback was obtained from a specific case within the context of a Management School where the proposed framework applies, in a department where Business Consulting Projects are performed and need to follow a methodological approach. With this, the framework was shown to a University professor of Nova School of Business and Economics to obtain feedback on its possible implementation in the CEMS MIM Business Projects and the necessary adaptations to use it.

## **5. The Resulting Proposed Framework**

The below framework provides a standardized overview of the process required with its activities/steps and outputs in order for a University to perform a project, being the first four topics the ones extended to the whole project process. This meaning, that they are always present regardless of the project stage or process in focus, serving as supporting activities. Each of the process groups are then divided into the main activities with a description and a related output. More specific guidelines and some important outputs are provided in annex for the most critical knowledge areas considered in literature so as to complement and allow managers to obtain more detail on the requirements of these essential activities. Since all projects are different, this framework can and should be adapted to the needs of each University, being a tool that helps project managers and teams in conducting them, considering the specific complexity and requirements.

**A. Project Management Office / B. Leadership / C. Communication and Stakeholder Management / D. Information Storage**



### **A. Project Management Office (PMO)**

The PMO is placed at a strategic level answering directly to the University board of directors, with a directive role, to autonomously assist and obtain the necessary decision-power. They assist project teams in defining standards and procedures, as well as the outputs, updating the framework when necessary to be aligned with the organization and help leaders deliver value.

### **B. Leadership**

The leader is in general terms the project manager assigned by sponsors with the required hard skills and knowledge on the area, as well as the institution and people involved in it and in the project. This person is the one responsible for managing the project and leading the team, with soft skills proven to be essential characteristics pursued to complement. These include communication and capacity to engage stakeholders as well as team-building and flexibility skills. The leader is also a change agent that is responsible for managing the related relationships and changes to the project.

### **C. Communication/Stakeholder Management**

Communication strategies are developed and applied throughout the whole project so as to engage stakeholders and manage their expectations, as it is proven to be essential for project success. Typical University stakeholders include students, teaching body, university staff and directors; being also possible to include employers, government or even the neighborhood. This communication is performed very early in the project and in a continuously manner, also being constantly controlled, following the plan through defined channels. This allows for information to be effectively managed and communicated through meetings, as well as to better manage changes so as to ensure that all members are aware of the project updates.

### **D. Information storage**

Defining an information plan is essential to better manage how to communicate it and to avoid misinterpretation. In this sense, all outputs and information gathered are documented

and stored in the same location, available to the respective interested players, aiding in managing stakeholder expectations. This information is monitored and continuously updated for each project, to allow the existence of historical data allowing the institution to pursue as time goes by a database with all projects performed that serves as a basis for more accurate future analysis and lessons-learned.

**5.1. Initiation**

This is the first phase of the projects’ lifecycle in the University, where the request for authorization of a new project and a description is formalized so as to obtain funds. A project manager is also assigned.

Activity	Description	Output
5.1.1. Identify Stakeholders	Identifies the stakeholders with their involvement, expectations, impact on the project, how to communicate with them as well as potential issues	Stakeholder Register <i>(Annex 1)</i>
5.1.2. Develop Project Charter	Describes the project with its purpose, assumptions, requirements and deliverables needed in a document. This enables to formally present the value provided and needs satisfied	Project Charter Document <i>(Annex 2)</i>
5.1.3. Approve Project Charter	Formal authorization with comments provided by the project sponsors that allows project manager to start applying resources and initiate tasks	Project Charter approved with signatures

**5.2. Kick-off Meeting**

The project kick-off meeting is the first step to start planning, where the project charter is reviewed so that expectations are aligned by general agreement. The project manager gathers the team and key stakeholders to define objectives and communication strategies.

**5.3. Planning**

This process is where most of the time is spent developing the course of actions (plans) that are needed for the project execution, monitoring and completion in accordance to objectives, ensuring all project aspects are understood and defined before executing.

Activity	Description	Output
<p><b>5.3.1.</b>Develop Scope Plan</p>	<p>Scope is defined in detail with a project scope statement, along with the requirements necessary to complete the project and how to monitor them. The Work Breakdown Structure (WBS) decomposes major activities into sub-tasks with milestones so that components are more easily managed with sufficient detail to support activity understanding and deliverables</p>	<p>Scope Baseline <i>(with scope statement and WBS)</i></p>
<p><b>5.3.2.</b>Develop Schedule Plan</p>	<p>Activity definition and relationships are performed along with resource estimation needed. The overall duration of each task is estimated, with their start and finish dates calculated; and the strategy and tools to control schedule are defined</p>	<p>Project Schedule Document <i>(Annex 3)</i></p>
<p><b>5.3.3.</b>Develop Cost Management Plan</p>	<p>The overall project costs and each activity's costs are estimated with required tools, in order to determine an approved cost baseline. Controlling cost techniques and strategies are defined to understand causes of the authorized budget deviations as well as to reduce them, with the definition of a contingency reserve</p>	<p>Cost Management Plan Document <i>(Annex 4)</i></p>
<p><b>5.3.4.</b>Develop</p>	<p>Project quality requirements and ways to ensure</p>	<p>Quality</p>

Quality Plan	they are being met are defined besides the regularity that it will be monitored with checklists	Management Plan
5.3.5.Develop HR Plan	Roles and responsibilities are defined and documented with the required skills for each task and relationships in organization charts. Feedback strategies and control are also established	HR Management Plan
5.3.6.Develop Risk Management Plan	The way to identify critical success and failure factors in a risk register, as well as how to identify the risk impacts are defined. Also, the monitoring tools and frequency as well as strategies and actions to mitigate risks are decided	Risk Management plan ( <i>with risk Register</i> ) ( <i>Annex 5</i> )
5.3.7.Develop Procurement Plan	Identification of project needs besides procurement and seller alternatives. Definition of the selection criteria and procurement decisions, as well as specification of the planned type of contract with its risks, if existing. How to manage and monitor the products or services procured is also analyzed	Procurement plan document
5.3.8.Develop Communication Plan	This process establishes an appropriate approach on how to communicate information with stakeholders, team and customers, besides transmitting their requirements. The timely communication basis and way of control is documented, to meet stakeholder expectations, aid in information sharing and avoid misinterpretation	Communication plan document
5.3.9.Gather and	All above plans are integrated and approved into a	Project



approve all Plans	single management plan used for the project execution	Management Plan
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#### **5.4. Execution Kick-off Meeting**

This meeting is the final step before actually gathering resources to perform the work planned. The team and stakeholders are gathered, adjusting final aspects and taking last-minute doubts to officially open the project execution.

#### **5.5. Execution**

The project starts to take action to complete requirements and specifications defined in the project management plan, being sustained by the monitoring and control process. Here, most of the budget is spent and actions start to pursue observable results, which may translate into changes versus the initial plan.

<b>Activity</b>	<b>Description</b>	<b>Output</b>
<b>5.5.1.</b> Perform Tasks	The team gathers to start performing activities as planned so that necessary changes can be detected. They are also developed and continuously trained to be updated and communication is also managed	Planning documentation updates
<b>5.5.2.</b> Conduct Procurements	After seller selection, contracts with the adjustments and specifications are signed to start executing them. During this execution, necessary updates are also performed to meet requirements	Contract document

#### **5.6. Monitoring and Control**

Performed in line with the execution process, work is continuously tracked and reviewed so as to ensure it is in accordance with the plan. If not, changes are identified and initiated, if approved and actions are taken to prevent other possible changes.

Activity	Description	Output
5.6.1.Scope Control	The project status is monitored to allow maintaining and adjusting the scope baseline	Scope baseline updates
5.6.2.Schedule Control	Time spent on activities is controlled to update changes on the schedule baseline and analyze possible delays/anticipation with its impacts, comparing actual time spent versus forecasted	Schedule updates
5.6.3.Budget Control	Costs are controlled by recording the rate at which the budget is being spent to observe the risk of spending more than the cost baseline, changing it if necessary and possible, and reducing those risks	Cost management plan updates
5.6.4.Quality Control	Results of executing quality requirements are monitored and recorded with checklists so that necessary changes can be recommended	Quality plan updates
5.6.5.Risk Control	Risks are controlled performing regular analysis on possible new risks, outdated ones and assure that planned strategies are being taken for the tracking risks, trying to minimize their impacts on the project by analyzing possible strategy changes	Risk register update
5.6.6.Control Procurements	Controlling procurements involves controlling the suppliers' scope of work to the project, including if appropriate resources and quality standards are used and analyzing necessary changes to contract conditions initially signed	Procurement contract revisal
5.6.7.Perform and	When controlling each of the knowledge areas in	Change request

approve Change Requests	this process and observed that changes need to be made, a change request is filled, specifying characteristics and impact to be furthered analyzed and approved, and performed during the execution	document <i>(Annex 6)</i>
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### 5.7. Closure

Formally closes the project with the finalization of all activities and final acceptance. A closure meeting is performed to perform a lessons learned gathering, file documents and free resources for other projects/activities.

Activity	Description	Output
5.7.1. Conduct close-project meeting	The project team and key stakeholders are brought together to formally close the project and perform lessons-learned besides documenting any useful information. Resources are released for other activities/projects	Lessons-learned form and closeout report
5.7.2. Close and file documents	Project manager verifies all documents, formally closing and filing them together in a single place with a closeout project report for future needs	Project document file
5.7.3. Close procurements	Perform meeting with the contracted entities, formally closing the contract and documenting key positive and negative feedback for future contracts	Formalized contract closure document

## 6. Discussion

The above framework's main objective is to serve as a basis for a more complex and adaptable one each University may develop. This is fundamental considering that Universities are project-oriented institutions, but still lack tools when trying to implement this culture.

A main idea to retain is that when Project Management tools are missing, problems like the ones existing nowadays arise. This framework helps solve those problems, namely the failures resulting from a lack of leadership and course of action. With an established procedure, the team knows what to do and when to do regarding each critical area and in each process group of the project. Most of the times, projects are not considered successful because even though they meet goals regarding time and cost, they do not meet stakeholder expectations. Another important idea to hold is that this framework helps align all stakeholder expectations so that in the end projects are perceived as successful when results are obtained.

One more conclusion relates to the risks this framework helps mitigate, namely the ones that may directly lead to cost and schedule overruns. As risks are stated and anticipated, control measures are taken and a course of action as well as possible outcomes are considered, allowing for possible cost and schedule overruns to be decreased. This also helps increase the margin for the unexpected risks, increasing the response capacity and success.

Stakeholder and Risk Management are the highlighted areas described deeply in the annexes with outputs, due to their importance and impact when problems directly related to them occur, resulting most times in project terminations. A project charter is found to be essential as many projects fail because not everyone is aware of its goals and objectives, and a change request allows to track and monitor every change more easily as they always occur.

As a final general conclusion, Project Management tools are essential to pursue so as to answer to the existing everyday challenges and changes. A Framework like the presented one results in a key starting point for evolution in University projects and for the percentage of successful projects to increase alongside with a decrease in the non-successful ones.

## **7. The Framework's Applicability**

On this framework's possible implementation in CEMS MIM projects, the feedback obtained confirms its usage and applicability with some already existing practices by the different

players. Adaptations include the fact that stakeholders are already defined for all projects, with this initial activity not needed. Initiation includes the Project Manager and team, but from the planning process onwards, activities vary between teams and their academic advisor, being adapted and performed by them. With this, activities such as Cost Management Planning, Human Resource Planning, and Procurement Plan are not applicable. The execution process is performed by the students at the same time as monitoring and control is performed by the business and academic advisors, excluding the mentioned not applicable activities. Finally, projects are closed with each team's meetings and report delivery.

## **8. Limitations and Further Research**

The main limitation of this study consisted in not being able to test the developed framework, meaning that no real results were observed regarding on the problems it can solve, as well as the ones that may arise when trying to apply a new concept and procedure to an institution that does not have it. Secondly, it was not possible to obtain answers of Universities abroad regarding their already implemented project management practices. The initial idea was to enrich the research with those specific cases so that the developed framework could be more realistic and adapted to the sector, considering the already existing best practices.

This lack of response can lead to a conclusion regarding the Capability Maturity Model applied to Project Management, which analyses an organization's maturity regarding Project Management practices. Either the maturity level is 0 and the problem steps completely aside; or the level is 1, meaning there is no generic mechanism to answer to the problem due to it being applied specifically to each case, where only punctual mechanisms exist. This is the reason why there is lack of capacity to address projects in a structured way in Higher Education institutions, being only possible in niches such as MBA programs or IT projects.

Considering the above, further research should apply the framework to analyze real cases. With this, it should be able to develop a deeper and more adaptable one to specific Universities and projects so as to be incorporated each time a project is developed.

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