01-027 – Usefulness of PM² methodology initiating phase artefacts in biomedical research project solicitation – Utilidad de los artefactos de inicio de la metodología PM² en la solicitud de proyectos de investigación biomédica

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Spanish Spanish

Seeking funding for research projects is a key activity for researchers in any field. However, submitting an application for funding can be a complex task, especially when relying only on the call template, without additional guidance or specific support. The PM² methodology, developed by the European Commission, provides a set of templates designed to efficiently manage projects, ensuring a structured and effective approach to project management. In this work, carried out in the context of the Project Design and Management course of the Biochemistry Degree of the USC, we analyze the usefulness of said templates to cover various grants in the field of life sciences. We came to the conclusion that, although some sections of the templates match the requirements of the research grants applications and can be useful to fill them, there are key aspects that are not addressed in them. In addition, there are sections that do not add any value, which implies that a significant adaptation of these templates would be required for them to be truly effective when applying for a research project.

Keywords: *PM²; Life sciences; Research projects; Project design and management*

La búsqueda de financiación para proyectos de investigación es una actividad fundamental para los investigadores en cualquier disciplina. Sin embargo, presentar una solicitud de financiación puede resultar una tarea compleja, especialmente cuando se depende únicamente de la plantilla de la convocatoria, sin contar con orientación adicional o apoyo específico. La metodología PM², desarrollada por la Comisión Europea, proporciona un conjunto de plantillas diseñadas para gestionar de manera eficiente los proyectos, asegurando un enfoque estructurado y efectivo en su ejecución. En este trabajo, realizado en el contexto de la asignatura de Diseño y Gestión de Proyectos del Grado en Bioquímica de la USC, analizamos la utilidad de dichas plantillas para cubrir diversas convocatorias en el ámbito de las ciencias de la vida. Llegamos a la conclusión de que, aunque algunos apartados de las mismas coinciden con los requisitos de las convocatorias de investigación y pueden ser útiles para cubrirlos, existen aspectos clave que no se abordan en ellas. Además, hay secciones que no aportan valor alguno, lo que implica que se requeriría una adaptación significativa de estas plantillas para que realmente resultaran efectivas a la hora de solicitar un proyecto de investigación.

Palabras claves: *PM²; Ciencias de la vida; Proyectos de investigación; Diseño y gestión de proyectos*

Acknowledgments:

Queremos agradecer a los profesores de la asignatura Diseño y Gestión de Proyectos del Grado en Bioquímica de la USC: César Pérez Cruzado, Emilio Rafael Díaz Varela y Carlos Amiama Ares, por la oportunidad de realizar y exponer este trabajo.

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1. Introduction

Obtaining funding for biomedical research projects is a highly competitive process, in which the quality of the proposal and its alignment with the evaluation criteria play a determining role in the success of the application. Writing an application for funding calls is a challenge for researchers, especially with no extra aid, i.e. when only the call template is available. This is due, partly, to the differences between the language used by the scientific community, full of technicalities, and the style required by the evaluation committee, which involves a vocabulary so specific that it could be difficult to interpretate, generate misunderstanding and negatively affect the likelihood of getting grants (Porter, 2007).

There are many published articles that contribute to improving the writing of this type of applications and that provide advice to increase the chances of receiving funding. Some of them propose strategies, highlighting the importance of planning, the logical structure of the content and the adequacy of the language (Guyer et al., 2021), provide writing guides (Davidson, 2005; Inouye & Fiellin, 2005; Patil, 2019) and, in several cases, the authors highlight key elements of the proposals (Chung & Shauver, 2008; Mocanu et al., 2024).

In this context, the use of project management methodologies, such as PM², could become a very useful tool when preparing project proposals that meet the standards of the applications, increasing the chances of success in obtaining funding, speeding up the drafting process, and implementing a methodology that would allow better project management if funding were obtained.

PM^2 is an easy and simple to execute Project Management Methodology, developed by the European Commission. It aims to enable Project Managers (PMs) to deliver solutions and benefits to their organizations thanks to effective management throughout the project lifecycle. PM^2 has been created considering the needs of the projects and institutions of the European Union, being adaptable to the specific demands of the teams involved in the project. PM^2 incorporates elements of globally accepted project management best practices, embodied in standards and methodologies. Its development has also been influenced by operational experience in projects both within the European Union institutions and in external bodies (European Commission: Directorate-General for Digital Services, 2023).

The PM^2 methodology provides a project governance structure, artefacts, and an effective approach, which increase management effectiveness by improving communication and dissemination of information, clarifying project expectations, defining the life cycle, and providing guidelines for project planning.

In PM^2 the life cycle consists of four phases (Initiating Phase, Planning Phase, Executing Phase and Closing Phase) separated by Phase Gates, where the result of each phase is reviewed and approved. Associated with each phase are a series of templates, called artefacts, which will allow the implementation of an operational management plan. The templates corresponding to the Initiating Phase are the Project Initiation Request, Business Case and Project Charter.

The Initiating Phase begins with a Project Initiation Request, which formalizes the commitment to examine in depth a problem, a need, or an opportunity, and describes the context. The artefact that follows is the Business Case, which establishes the logic behind the project, provides the justification and highlights the budget constraints. Finally, the Project Charter builds on the Business Case and defines the scope of the project, its requirements, and its deliverables.

2. Objectives

This work, conducted in the context of the Project Design and Management subject of the Bachelor's Degree in Biochemistry of the University of Santiago de Compostela, aims to:

-Analyse the usefulness of the PM^2 methodology when applying for research project fundings.

-To evaluate the viability of its implementation, considering that, as mentioned, the linked procedures might be confusing for researchers.

Emphasis will be placed on the usefulness of the artefact templates corresponding to the Initiating Phase of the PM^2 methodology, since, at the time of the application associated with a given call, the project would be in that phase.

3. Methodology

In this article, the content present in the artefacts of the Initiating Phase (Project Initiation Request, Business Case and Project Charter) of the PM^2 methodology will be contrasted with the content included in the templates of the current research project funding calls. Specifically, it examines the 2024 research project grants templates from the University of Santiago de Compostela, the CaixaResearch Health 2024 call, the 2024 R+D+I Projects (health call) from the Ministry of Science, Innovation and Universities, and the call for Knowledge Generation Projects 2024 from the previously mentioned Ministry.

To assess the usefulness of the PM^2 methodology in the application for these calls, a code-letter was assigned to each section of the artefacts of the Initiating Phase according to its degree of similarity with the criteria set out in these calls. Five levels of equivalence were established to be assigned for each section: total (T) if the entire section is useful and corresponds to the sections of the templates linked to the earlier mentioned calls; partial (P) when only part of the content is useful and matches the templates; null (N) if the section is not useful because it does not provide relevant information for the application; redundancy (R) if the information has already been presented in a previous section of the same artefact; and ampliation (A) if the content expands the information from aspects addressed in previous artefacts.

Once the equivalences were established, a similarity analysis was conducted by comparing calls' templates with each artefact individually. This approach enabled a detailed evaluation of each template by merging the values assigned to each relevant section.

Additionally, the number of sections in the templates that did not correspond to the sections of the artefacts of the PM^2 Initiating Phase was also evaluated, to determine whether using this methodology as a tool would leave any part of the standard templates uncovered.

4. Results

The results of the analysis of the different templates associated with the calls mentioned above are divided into three different sections, given that there are three starting artefacts within the PM^2 methodology: Project Initiation Request, Business case and Project Charter.

The individual assessment of every section in the regular template—that is included in each of these artefacts—is shown in Table 1, where the abbreviations mentioned in the methodology section were used: T stands for total equivalence, P for partial equivalence, N for null equivalence, and R for redundant with regards to other sections in the same PM^2 template.

Table 1 did not include those sections of the artefacts where an extension or repetition of another section present in an artefact previously covered was observed.

Table 1: Equivalence of the sections within the PM² Initiating Phase versus the sections in the funding calls' templates.

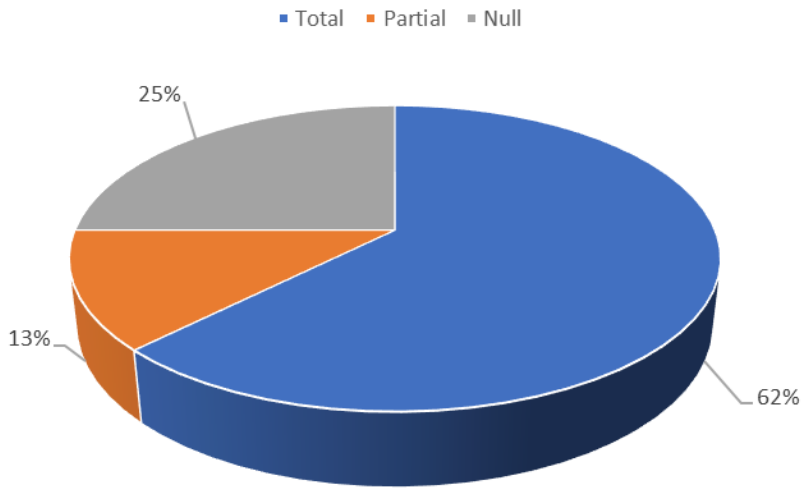
Context	T	Deliverables	T
Legal basis	P	Costs	P
Results	T	Roadmap	P
Impact	T	Synergies and interdependencies	R
Success criteria	N	Governance	N
Assumptions	T	References	T
Constraints	N	Executive summary	T
Risks	T	Considerations on the Business Case	N
Situation impact	P	In and out scope	N
Interrelations and interdependencies	N	Stakeholder and user needs	P
Possible alternatives	N	Features	N
Benefits	N	Cost, timing, and resources	T
Scope	R	Methodology	P
Solution impact	R	Change management	N

Based on this information, the analysis of each one of the artefacts was conducted separately, while also providing possible adaptations in each section.

4.1 Project Initiation Request

This artefact, as noted above, provides the main "idea" and basic information about it. To verify the usefulness of this document, a selection of i) the sections that fully correspond, or are equivalent, to the requirements indicated in the calls' templates; ii) the sections that partially cover such requirements and iii) the sections where the content is not relevant for raising funding in competitive calls, was made.

Figure 1: Equivalence of the sections of the Project Initiation Request vs the corresponding sections in the funding calls' templates.



The most relevant points addressed in this document are the context of the project, the expected results and the impact (associated with various aspects: society, health, knowledge, etc.) since they are issues of paramount importance and linked with a high score in the evaluation process in calls analysed.

This artefact demonstrates, as can be seen in Figure 1, a high degree of similarity to the templates used in research funding calls, with 62% total correspondence and an additional 13% partial correspondence, making it a potentially valuable tool. As the first document to be completed under the European Commission and European Union's PM² methodology, it addresses several key requirements—such as project context, anticipated impact, and expected results. However, its utility is constrained by the inherent nature of its purpose: as an initial document, it presents information at a general level, therefore, the information included should be focused solely on the specific required points. This stands in contrast to the expectations of conventional research funding calls, which typically require detailed and specific information from the start.

The changes that could be done in this artefact so it matches better the requirements of the studied calls would be the following: elements such as success criteria related to scope, costs, and timelines can be considered unnecessary during the initial stages of basic research projects, where such details are often undefined. Similarly, constraints affecting different project areas could be omitted, as they hold limited relevance in this context.

4.2 Business Case

This document aims to justify the project investment. As with the previous artefact, relevant sections were selected based on the requirements (fully or partially matching) of research project call templates. Since the Business Case builds on the Project Initiation Request, some sections overlap, with slight variations or expanded details. Additionally, it is significantly more detailed than the first artefact. While some sections differ in terms of project management focus, they often refer to the same core concepts when completing a research call application, leading to redundancy.

Figure 2: Equivalence of Business Case sections vs the corresponding sections in the standard calls' templates.

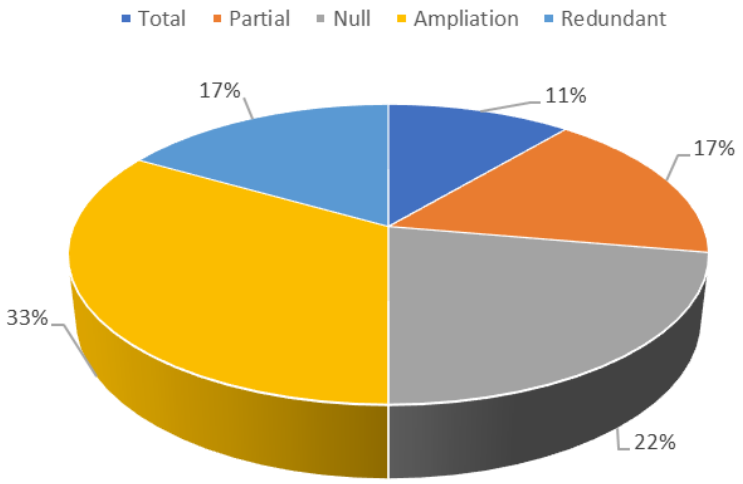


Figure 2 shows the % of equivalence and thus usefulness of each of the sections present in this artefact vs requested sections in regular applications. Compared to the Project Initiation Request, the usefulness of the Business Case has declined significantly—partly because

many of the sections simply continue the previous ones, and partly because this artefact is clearly tailored to corporate projects rather than basic research initiatives typical of universities.

A substantial portion of the content in the Business Case—approximately 33%—overlaps with that found in the Project Initiation Request, albeit with certain nuances or expanded details. Also, in the context of the analysed funding calls, 17% of its content is redundant. Moreover, the proportion of content with full equivalence is relatively low, at only 11%, while non-equivalent content accounts for a significant 22%. These findings indicate that, in contrast to the Project Initiation Request, which demonstrated a much higher rate of content equivalence, the overall utility of the Business Case in the context of research funding applications is considerably lower. This artefact highlights most clearly the fundamental divergence between the PM² methodology and the structure of typical research funding templates. While PM² is primarily designed for business- and implementation-oriented projects, the funding calls analysed are generally tailored to basic or academic research initiatives—projects that characteristically seek external financial support and follow a different logic of justification and planning. This divergence underlines the challenge of directly applying PM² artefacts to research proposal contexts without prior adaptation or modification.

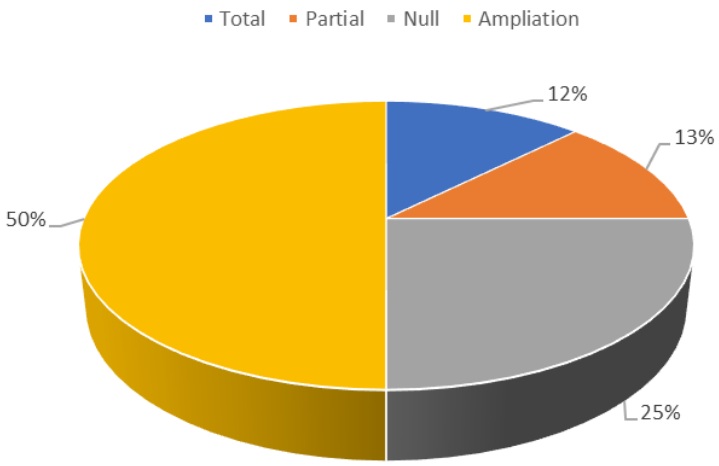
Another significant point of divergence, not only present in this artefact but also in the next one, the Project Charter, lies in the relevance of defining a governance structure. While this element is essential in the types of projects for which PM² artefacts are typically employed—particularly those requiring the establishment or adaptation of formal management frameworks—it proves largely unnecessary in the context of research funding applications. In academic settings, there is generally no requirement to modify or implement new governance structures, as existing institutional frameworks already provide the necessary oversight and, in fact, doing so may introduce unnecessary complexity, requiring time-consuming adjustments to existing structures without offering any real advantage in the application process. In research calls, the emphasis is placed instead on the project team, and particularly on the role of the Principal Investigator (PI). The PI is responsible for coordinating the project, submitting the funding application, and often plays a decisive role in whether the proposal is ultimately approved.

In the Business Case, certain impact-related aspects require adjustment to match the funding calls' requirements. The impact on internal processes or organizational structures—especially in the absence of the proposed project—is typically irrelevant in research calls. Instead, emphasis should be placed on the project's potential contribution to knowledge within the field. Additionally, alternatives to the current situation are generally not required, as they are often determined before selecting the funding call. Likewise, detailed descriptions of solution benefits are seldom requested at this stage.

4.3 Project Charter

This document specifies objectives, requirements, risks, and other features of the project. It is the last artefact of the Initiating Phase and, therefore, the last to be filled in. All its sections require a more detailed description than the previous artefacts' sections.

Figure 3: Equivalence of the sections of the Project Charter vs the corresponding sections in the standard calls' templates.



As shown in Figure 3, by the time this artefact is completed, a substantial portion—approximately 50%—of its content is an ampliation to information provided in previous artefacts, reflecting the more advanced stage of the Initiating Phase. Also, a significant proportion of the document—around 25%—proves to be unnecessary, as it does not correspond to the typical requirements of the studied calls. This suggests that the Project Charter is the least aligned of the analysed artefacts in terms of added content (as in not mentioned in previous artefacts) relevance to funding application templates. Nevertheless, it is important to note that many of the repeated sections hold significant value. Their increased level of detail aligns well with the requirements of research calls, making them more relevant than their counterparts in the Project Initiation Request. As a result, the overall usefulness of the Project Charter is also enhanced.

Among the most noteworthy sections of this artefact are those related to cost estimations, timelines, and detailed risk assessments. These elements are not only essential in the context of standard funding calls but also are adequately detailed and characterized according to what is commonly required when seeking funding for research projects. Those sections, which cover both the economic part and the organization and planning of the project, constitute a fundamental part of the proposal, being decisive in the evaluation of the viability and quality of the project. Therefore, while some information in the Project Charter may be redundant or misaligned, its overall value is enhanced by the depth and detail it provides in critical areas. In this regard, it can be considered more useful than corresponding sections in the Project Initiation Request or even the Business Case.

When looking for adaptations of the Project Charter so it is more aligned with the funding calls, it would be advisable to omit both general and specific scope descriptions, as well as to eliminate sections already presented in previous artefacts to avoid redundancy if its content is not further extended in this artefact.

Another necessary modification would involve adjusting the level of detail in certain sections of the artefacts. Some elements should be presented more specifically, while others may benefit from a more general approach. For example, in PM², milestones are typically described in broad terms. In contrast, standard research funding applications require a detailed timeline from the outset, including a clearly defined and thoroughly explained set of milestones.

The approach of the artefacts should also be adjusted to better align with academic conventions. For instance, rather than focusing on the needs of external stakeholders and

users, greater emphasis should be placed on detailing the contributions of each investigator within the research team and justifying their roles as external stakeholders tend to be less relevant in academic research contexts. Additionally, the impact should be reframed to focus more on societal or scientific contributions, rather than organizational or individual impacts. Knowledge transfer, particularly through conferences or industry collaborations, should be prioritized over the impact on external stakeholders. Furthermore, the concepts of impact and knowledge transfer should be directly linked to potential synergies. Finally, the requested results should be centred on objectives and hypotheses—articulating what the research aims to achieve and the expected outcomes, in line with the requirements of typical funding calls.

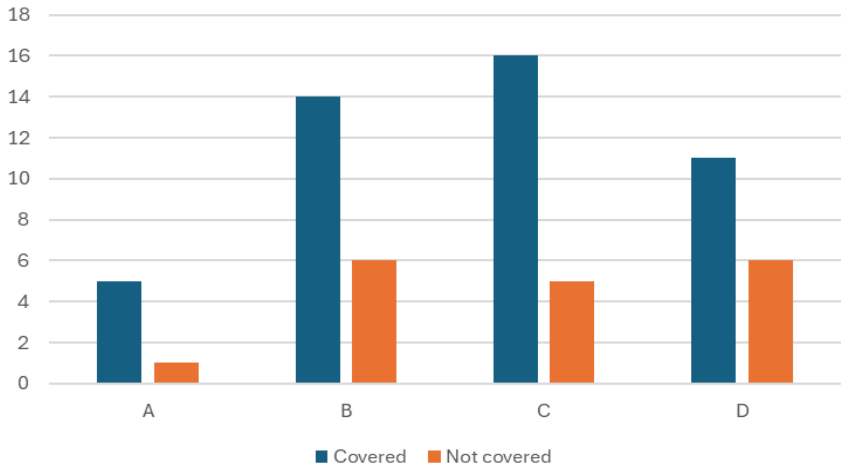
The final type of modifications would involve adding specific elements required by research projects and funding calls. Firstly, a scientific summary is typically requested, alongside one written in a language accessible to the general public. Regarding funding sources, a detailed budget should be included, categorized into personnel, team expenses, and consumables, along with additional items such as travel costs, conference fees, and publication expenses. Additionally, relevant references, including articles or other publicly available dissemination materials, should be provided to support the proposal.

4.4 Covered percentage of the applications

After evaluating the equivalence between the sections in the three artefacts of the PM^2 Initiating Phase and those in research project application templates, we identified the sections included in the templates of each call covered by the PM^2 framework, as well as those not addressed, to analyse the overall equivalence. It is important to note that only sections providing clear, direct value to the application were considered, while those that are purely informative, such as group or organization details, were excluded.

To streamline the data representation, we assign code letters to the various templates being assessed: A represents the University of Santiago de Compostela's 2024 research project grants, B stands for the CaixaResearch Health 2024 call, C refers to the Ministry of Science, Innovation and Universities' 2024 R+D+I Projects in Health call, and D denotes the same ministry's 2024 Knowledge Generation Projects call.

Figure 4: Number of sections in the applications under study covered and not covered by the PM^2 templates.



As shown in Figure 4, the PM^2 templates provide high coverage for all application templates, with coverage exceeding 50% in all cases. Therefore, it can be concluded that the Initiating Phase artefacts of PM^2 cover nearly all the sections required in the templates associated with the analysed calls.

5. Discussion

Based on the analysis conducted in this study, which evaluated the correspondence between the content of templates used in research funding calls and the artefacts employed during the Initiating Phase of the PM² methodology, we conclude that, although the core components of the PM² artefacts align substantially with the standard requirements of such templates, discrepancies emerge at the level of detail. Specifically, it was observed that certain elements within PM² offer limited or no practical utility when applied to the completion of templates commonly associated with research funding proposals.

In this type of funding calls, it is often unnecessary to complete certain sections of the PM² artefacts, like parts as important as the governance structure or the success criteria, which are largely irrelevant in this context. Moreover, these calls typically require a high degree of specificity from the outset, which does not align well with the information flow characteristic of the PM² Initiating Phase. In the PM² methodology, information is introduced progressively—beginning with general concepts and gradually evolving into more detailed and concrete definitions of the project's scope and objectives.

A practical way to use the Project Initiation Request, Business Case, and Project Charter in research funding calls is to adapt them to the specific requirements of current proposal templates. This would require substantial modifications to align their content with the academic research context, with adjustments such as removing sections that offer little or no value in research proposals, ensuring that the artefacts remain relevant and efficient for evaluation purposes, or changing the focus of some sections to make them more similar to what is requested in the funding calls, among other changes.

As we stated previously, the changes required to adapt the templates used in PM² methodology to align with those in research funding calls are substantial. If the templates' usefulness is evaluated solely as a support tool for the funding application, they would likely be of limited benefit due to the time spent addressing irrelevant sections. Consequently, they would not be ideal for this purpose. However, if the option of using PM² throughout the project's development is considered, it may be advantageous to complete these templates alongside the funding request. This would allow for seamless project management using the PM² methodology, should the funding be approved.

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Use of Generative Artificial Intelligence

No generative artificial intelligence was used in preparing this communication.

Communication aligned with the Sustainable Development Goals