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## PROJECT MANAGEMENT: IMPLEMENTATION OF PORTFOLIO MANAGEMENT APPLIED IN MEDICAL PRACTICE

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*Sabrina Palma Arenas*

Santo André – SP

<http://lattes.cnpq.br/9032422439432610>

<https://orcid.org/0000-0001-8251-7297>

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**Abstract:** The choice of projects is based on structured assessments, complemented by clear and systematic tools/instruments and standards, resulting in greater transparency in the definition and monitoring of expected project results. This way, this study reviewed the processes that make up the institutional management of programs in a hospital sector to determine methods for evaluating programs and projects carried out in the area of Medical Practice and proposes tools/instruments for the evaluation of programs and projects, allowing the construction a more transparent and efficient process. Depending on the maturity of the institution's area, the suggested instruments are scoring models and comparison matrices, which will allow for faster and more systematic decisions on projects that suit the area's objectives.

**Keywords:** Project Assessment; Portfolio Management; Decision Support.

## INTRODUCTION

The world is increasingly dynamic and competitive, so managers must constantly monitor the execution of projects and check whether they are aligned with the institution's strategy. In this context, the structuring of good practices in project management and alignment with performance indicators are fundamental to achieving the benefits expected from investment in projects (Gil, 2017). Therefore, this work aims to understand the development of the management of multiple projects in the area of Medical Practice and their implementation.

Integrated project management, whether short, medium or long term, aligned with an institution's strategic objectives constitute portfolio management.

The projects that make up a portfolio are not necessarily interrelated or linked to the same strategic objective, but they can certainly be measured, ranked and prioritized (PMI,

2017). Thus, portfolio management appears with the objective of assisting organizations in making decisions with regard to projects that are or are not worth taking forward, revised, postponed or even canceled, with reference to meeting objectives. strategies of a given institution over time (Zuccolan, 2013).

According to the Project Management Institute [PMI], portfolio management consists of the steps of identifying, categorizing, evaluating, selecting, prioritizing and balancing the projects that will make up the institution's project portfolio, evaluated and validated from a perspective that takes into consideration, corporate strategic alignment, technical and economic feasibility, added value and relationship with other projects that make up the portfolio and resource availability (PMI, 2017).

Within an institution, portfolio management is found between what we call the strategic level, where planning and decision-making are carried out by the board, and the tactical level, responsible for translating strategic planning to the operational level of the organization. (Zuccolan, 2013). However, despite the importance and critical role of portfolio management within an institution and/or business area, it is not always conducted in a systematic way and this occurs for several reasons.

As in all daily activities of an institution, managers responsible for project management must have specific skills or develop these skills through knowledge of possible scenarios that may occur during project execution. (Montes, 2018).

According to Carvalho, Lopes and Marzagão (2013), the search for growth and better results can lead to differentiation and competitive advantage. Portfolio management becomes critical to manage interests, strategies and risks. The success of a company in the market in which it operates depends directly

on product, project and portfolio management (Ebert, 2007).

Research shows satisfactory results that reinforce the need for mature practice in portfolio management practices within organizations. It was observed that companies that adopted the use of portfolio management tools/instruments achieved 10% to 25% in cost reduction and increased return on investment for the same budget, by financing projects with greater added value (Pereira, 2009).

Added value is understood not only as the amount invested for a given project, but also as the direction of other resources that are often considered secondary, for example, people, areas, procedures in tax bodies and risks inherent to the project. Thus, decision-making starts to occur in a context of the organization's strategic priorities and no longer in choices of options 'felt' at the moment (Zuccolan, 2013).

However, Lourenzani (2002) states that there is a rupture between theory and practice in portfolio management, where in the area of Medical Practice, this structuring and recognition of importance are listed as essential for managing the systematic portfolio management process.

Therefore, in this sense, the focus of this work is on the implementation of project portfolio management in the area of Medical Practice using methods and tools/instruments in a Large Hospital in the State of São Paulo.

## **MATERIAL AND METHODS**

As the use of project management in companies continues to grow, new technologies are created, new methods and new tools appear on the market. However, the focus of this work is the implementation of management of organizational Medical Practice activities so that we can gain a better understanding of the benefits of project management within the area's business domain. Project management concepts are

designed to introduce the fundamentals of project management and the application of the method in an organizational setting. It also aims to improve the quality and execution of services provided in the area.

In the academic field, aid methodologies such as decision making are great options to consider, as they are constantly growing, and their use covers numerous circumstances. Decision-making done correctly can be responsible for big differences in the long term, such as increased Quality and Patient Safety. These points justify further study in order to help improve the decision process and portfolio management (Montes, 2018).

To develop this work, it is necessary to apply methods that direct its evolution in an organized, structured and coherent manner. Initially, a set of portfolio management practices and tools/instruments will be gathered from articles, case studies and bibliographies that can be applied to the current reality of the area of Medical Practice under study, adapting them if necessary; Furthermore, it is intended to propose to the area's Management the implementation of practices and tools/instruments that will be raised for a more efficient selection of projects to compose the portfolio.

The methodology for developing this work is exploratory research, it does not involve handling data, information or biological materials, given the need to understand, through the use of techniques such as opinion interviews, through the application of a questionnaire without direct contact with the respondents and field observation, the research environment in order to direct the proposition of improvements (Gil, 2017).

As for the method of approaching the problem, combined research with unidentified participants was chosen, which considers both the quantitative and qualitative aspects during the research process. The quantitative

aspect occurs by quantifying, often through statistical methods, the data collected, translating opinions and information into numbers so that they can be analyzed, compared and classified. On the other hand, the qualitative aspect takes into consideration, the subjectivity of the subject's relationships with the world, which cannot be translated into numbers (Turroni and Mello, 2012). Thus, the combined research method was selected taking into consideration, the quantifiable nature of the data collected while also taking into consideration, the context of the research environment.

For the case study carried out, the object of study of this work concerns the projects conducted by the Department of Medical Practice Projects, of a large hospital located in the state of São Paulo. Currently, the institution adopts as a methodology for developing its projects the guide to good practices in project management, 6th edition "Project Management Body of Knowledge [PMBok]". The branch of the company that takes care of other areas will not be the object of study in this work.

The process diagram presented in Table 1 presents the steps followed in the research:

According to Table 1, the scope of work foreseen in each stage is presented below.

Step 1 refers to data collection: Step 1 consisted of researching bibliographic references that could support the work throughout its development, from the foundation of the research project to the methodology for analyzing and interpreting the data collected. For this, articles and case studies were used, researched on research portals.

Stage 2 was carried out through interviews with employees, coordinators and area management, in order to collect information about the strategic guideline, understanding of portfolio management within the Medical

Practice area and identified opportunities for improvement in the current process.

In step 2, the current process was mapped: Step 3 considered the survey of the current process of selection, prioritization and balancing of projects within the area, in order to provide a greater understanding of the current process and guide the identification of points of improvement.

Step 4 consisted of checking the area's current portfolio management map, in order to identify and analyze the critical points of the current process. The information collected in the interview process along with the portfolio management practices observed during the research were considered for this analysis.

Step 5 brought the proposal for improvements: In step 5, a proposal for improvements was prepared for the current process, in order to direct coordinators and area management in making decisions for projects with greater added value. The criteria for selection, prioritization and balancing of the project portfolio took into consideration, aspects collected in literature and those presented in the classroom during our course.

## **PRELIMINARY RESULTS**

Based on the interviews, the author's experience and observations in portfolio management, an analysis was carried out, identifying how project and portfolio management occurs in the area of Medical Practice and the methods used to evaluate projects for portfolio formation. Based on the models found in the literature, project evaluation tools are proposed for the respective field contexts.

Step 1 Data collect	Level 2 Current process mapping	Step 3 Improvement Proposal
<ul style="list-style-type: none"> <li>• [Step 1] - Search for bibliographic references that support the research problem</li> <li>• [Step 2] - Interviews with employees, coordinators and area management</li> </ul>	<ul style="list-style-type: none"> <li>• [Step 3] - Description of current activities in flowchart format</li> <li>• [Step 4] - Analysis and identification of critical points of the current process</li> </ul>	<ul style="list-style-type: none"> <li>• [Step 5] - Propose improvements based on good Portfolio Management practices</li> </ul>

Table 1: Process diagram – Steps used in developing the work

Source: Original research data (2022)

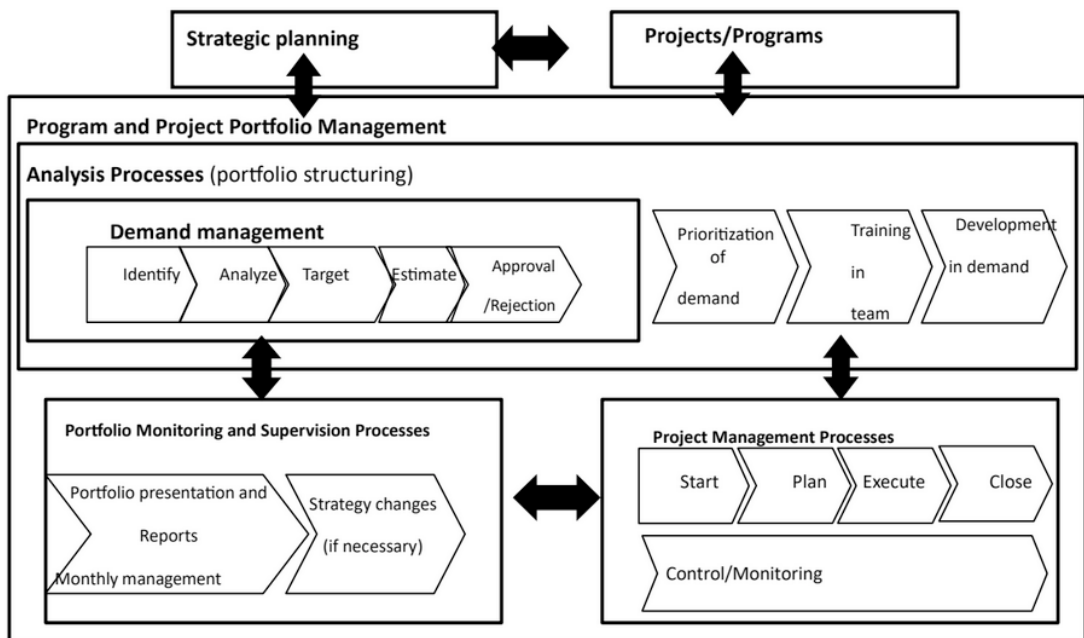


Figure 1: Portfolio Management Processes

Source: Original Search Results (2021)

## PROJECT PORTFOLIO MANAGEMENT – STRUCTURING THE MEDICAL PRACTICE PORTFOLIO

The portfolio management structures in the area of Medical Practice under study included processes of adjustment, monitoring and supervision and management of projects related to the annual planning and strategy process, prepared in accordance with the processes presented by the interviewees as answers to the following questions in

the Appendix 1, Question 1 and author's observations and participation in the implementation of the Portfolio Management process. The selection of respondents was sufficient, as it provided more details regarding the theoretical perspectives on the project portfolio management approach, and the area manager provided a broader and more practical point of view.

As it can be seen in this mapping represented in Figure 1, as part of the adjustment process, project selection is

based on the following steps: identification, analysis and elaboration, estimated deadlines, establishment of objectives, analysis and approval/disapproval of requirements, which constitute a formal process known as portfolio management, the focus of this study, detailed below and carried out in a table in Appendix 2, Table 6. A summary explains who is responsible for the activity, what they carry out, how they carry it out, the beginning and end of each step. These steps are similar to the identification, classification, evaluation and selection of items proposed by PMI (2017), as shown in Figure 1, and follow the same logical sequence throughout the development of the process. However, in Portfolio Management, these steps are numbered differently from PMI (2017), as they are organized based on the needs of the forwarding process for a specific employee to fill in the information corresponding to their project.

Portfolio management is processed in a specific project management instrument and access is limited to collaborators in the area (generally analysts and consultants), and users in leadership positions (managers, coordinators). The instrument is suitable to support the process of selection and monitoring the development of programs designed in the area of Medical Practice, standardizing the definition, classification, analysis and choice of new program/project needs, known as requirements. Through the answers to Question 2 of the interview (Appendix 1), it is identified that the activity begins with the needs defined by the area (product/service development, which is in the area of Medical Practice) and areas with interface (all areas of the hospital, which have an interface with Medical Practice), based on the needs to improve systems/processes, actions that guarantee Quality and Safety and/or identification of the Board. As a way of monitoring the progress of projects, a record

of project activities/needs identified in excel spreadsheets is made, in the tool/instrument called kanban, where the weekly activities of each project are listed and presented weekly to the Medical Practice team. This measure helps to visualize demands, with the maturation/elaboration of strategies to achieve the goals of each project.

From the identification, corroborated by the answers to questions one, three, four and five in Appendix 1 and by the author's observations, each project/program developed an independent process management based on its scope, where there is a person responsible for entering information from requirements in a tool/instrument called Visual Management. After that, each month information is added for the subsequent stages, recording details of the project's characteristics and evolutions based on the development and classification strategies, which are detailed, before determining the estimated completion time for each project. This material is presented monthly to employees and area leadership.

After requirements management, other steps of the portfolio adjustment process occur: prioritizing activities and balancing the portfolio, which are directly related to the ongoing project process. The interface with Medical Practice is the decisive factor in approving the area's project portfolio and obtaining the necessary resources for development, through the strategic objectives defined in the annual plan, decisions that are owned by the manager and supported by the Board. Once projects and programs are approved, the management process for project deployment and portfolio monitoring and control begins, to ensure that investment results are aligned with strategic objectives.

## EVALUATION OF PROJECTS TO COMPOSE THE PORTFOLIO USED IN MEDICAL PRACTICE

The analysis of the projects that will make up the portfolio is first carried out individually for each project/program during the requirements management analysis step and then validated through a leadership assessment, which includes prioritization and balancing of the portfolio in preparation. All projects/programs presented to the manager during the area's annual organization process consist of certain requirements. The Manager determines the goals that will make up the demands and that will be developed as projects.

The categorization of needs and connections with strategic initiatives identified during the project selection step are detailed below and summarized in Table 2. These items are listed in the answers to question 5, Appendix 1 and are validated through the author's observations at as some requirements evolve during the monitoring process.

area is involved, multisectoral, when the project development involves two or more areas, strategic, when the requirement is closely related to strategic planning. The strategic demands defined for the institution, and the legal nature, when a need arises to comply with criteria defined by the regulator, exists only as an option that best represents the need.

The link to the strategic plan is carried out by the area requesting the demand, selecting the strategic guidelines that best suit the objectives of the needs. This categorization of links and requirements represents a categorization strongly linked to the definition and objectives of strategic planning.

The estimated completion time of the project/program is calculated by calculating the planned activities and possible developments according to the characteristics of the requirements detailed in the presentation and elaboration step.

At a detailed level, it can be seen that the Visual Management material under study specifies its criteria through an open free text field, which means that the quality of the description may not be completed satisfactorily, affecting accuracy, causing problems in future steps, but in relation to the criteria that were used, the interviewees considered them suitable for managing portfolios in the area of Medical Practice.

Demand Management	Presentation and Details
Criteria Identified	<ul style="list-style-type: none"> <li>• Objectives;</li> <li>• Justification of the Choice;</li> <li>• Description of the current scenario;</li> <li>• Description of desired results;</li> <li>• Relationship with other projects/ demands;</li> <li>• Demand classification;</li> <li>• Link with the strategic plan.</li> </ul>

Table 2. Criteria addressed by Medical Practice for project analysis

Source: Original Search Results (2021)

The author informs the specificity of the requirements and they are reported in free form, with each person responsible for the project being responsible for the level of detail, depth and quality of the information.

The distribution and classification of the project indicates whether the requirement is sectoral, when only the project development

## RECOMMENDATIONS FOR INSTRUMENTS TO SUPPORT DECISION-MAKING IN THE CONSTRUCTION OF MEDICAL PRACTICE PORTFOLIO PROJECTS

The assessment of the results obtained in the experimental step shows that efforts are already being made to structure project management, but some recommendations can be made in the analysis, presentation and refinement step of the evaluation of this activity. Table 3 summarizes the recommendations for practices to be followed.

In addition to the recommended practice, verifying that the area does not use any support method for assessing needs in the requirements management analysis step, which is just a subjective analysis of the information recorded in the previous step, vulnerable to variability and depending on the project /program, the person responsible needs to have key skills or knowledge needs to be developed.

Recommendations based on methodologies and strategies identified in the literature and evaluation criteria for candidate projects for portfolios available in the area, combined with a scoring model based on multi-criteria (Figure 2) and a comparison matrix (Figure 3). As a tool to verify the individual characteristics of each requirement, some parameters are followed.

The proposed scoring model, based on the model proposed by PMI (2017), used regulation with strategy and connection with other programs/needs as strategic criteria and interface with Medical Practice for illustrative purposes, showing that according to Table 3, indicating the exchange after the proposed revision. The projects are based on the criteria used in the area of Medical Practice identified in item 1.2 and summarize the main points of the evaluation, taking into consideration, the alignment of the project

with the business strategy, based on the link to strategic initiatives and classifications, saving resources and increasing demand for benefits. When projects require relationships with other projects or development, based on assumptions and/or with other dependent/integrated projects and project objectives, they may involve requirements cost, derived from cost estimates and financial returns.

For dynamic analysis of the model, a score was established for each criterion based on the projects' objectives, for example, if project-strategy alignment is considered more important, assign a higher value, adding 100% compliance for each criterion. It was recommended to provide this prototype with appropriate criteria and weights in the analysis step before submission for approval, with the user responsible for each item being responsible for managing the project in accordance with practice, as per Table 4, according to the differentiation of needs.

There is importance in aligning needs with strategy, savings, resources and opportunities to increase gains from project results (relationships with other projects/demands) and have feedback on the investment of time and resources. This table is just an example of a system and it is recommended that you review it against the suggested standards.

For the scoring model, an overall score is then obtained for each criterion by multiplying the low, medium or high ratings by their respective weights and, finally, a strategy index is generated, calculated from the sum of the overall scores for the strategy criterion, divided by the sum of the respective scores. The maximum value of the percentage of strategic contribution is obtained. Next, the general index is obtained and a value is calculated by the geometric mean of the strategic indicators, indicating that the assessment of needs is based on the institution's strategic contributions.



Stage	Difficulty	Practice Suggestion
Identification	The record of identifying new project requirements is not standardized, leading to possible loss of information and insufficient details of the information involved.	<ul style="list-style-type: none"> <li>The registration of new project requirements must be standardized;</li> <li>Provide standard templates;</li> <li>Clearly explain the fields;</li> <li>Training application, if necessary, to clarify how to use it.</li> </ul>
Presentation and Description	The quality level described may be unsatisfactory, affecting the accuracy of the next steps. Proposals that are not well described may be important, but disregarded.	Guide employees on how to fill out the fields.
	The link to the strategic plan is made through the requirement request area.	Frequent updates of users (analyst and manager profiles) involved in the organization's strategies.
Estimate of Deadlines/Goals	Emphasis on criteria to achieve goals.	Review the standards to see if they actually fit the objectives.
		Standardize and describe each standard to evaluate the development and achievement of goals through the suggested instruments.

Table 3: Practice recommendations in Medical Practice Portfolio Management

Source: Original Search Results (2021)

Method	Low	Average	High
Align with strategy	There is no link to the strategy	Contribute to some (or some) part of the strategic plan objectives	Contribute significantly to the results of some (or more) strategic initiatives
Relationship with another project/demand	It has no connection with the achievements/results and development of another Project/Requirement (Incremental)	Contribute to the achievement and/or development of others Project/Requirement (Incremental)	Results directly affect results and/or development related to other projects/requirements (incremental benefits)
Financial feedback	Unable to estimate increase/decrease in revenue and duration	Increase revenue or Reduce long-term costs	Increase Revenue; Reduce costs in the short term.

Table 4. Suggestion for analyzing criteria for Scoring Models

Source: Original Search Results (2021)

MODEL OF SCORING		ASSESSMENT				Punctuation Total	Strategic Index	Total Index
		Weight	Low	Average	High			
Strategic Criteria	Alignment with strategy							
	Relationship with other projects/demands							
	Return							

Figure 3. Suggested Scoring Model

Source: Original Search Results (2021)

Demand	Classification	Strategic initiatives	Strategic indices	Result
1			%	Invest and prioritize allocation of resources
two			%	Investment not recommended

Table 5: Needs Assessment Report

Source: Original Search Results (2021)

Given the hypotheses made in the first paragraph of this section, the two proposals are considered complementary to the extent that the scoring model makes the items mutually comparable, identifying strategic indices and a comparison matrix that allows for faster and more systematic decisions about suitability for project objectives. business. The items, based on the comparison of indicators, indicate eligibility for the diagnosis.

After these assessments, a spreadsheet report was prepared, which helped to create scenarios based on filtering and grouping by needs and weights to balance and prioritize programs and projects, mainly by strategy and/or recommendations. The diagnosis is presented in Table 5.

## **CONCLUSIONS OR FINAL CONSIDERATIONS**

This study reviewed the portfolio composition process for an area of the hospital sector, identified evaluation criteria for items used in the area of Medical Practice and contributed with proposals for instruments/tools to support decision making. The dynamics of project analysis and evaluation, presented in the mapping, the steps of identification, classification, analysis and definition of projects proposed by PMI (2017) will be carried out by the area during requirements management through identification, analysis and refinement, steps from estimating deadlines and achieving goals, analyzing and approving requirements, but with somewhat different separations in different forms and dynamics, to describing and estimating project closure and presented some variability, as it depends on the main capabilities of the people involved. However, limitations of these steps were found and a list of suggestions for improvements was generated.

The methods used to evaluate the project at the time of analysis were defined in each step of requirements management, namely key descriptors, requirements classification, link to the strategic plan, cost estimation results and financial return estimation. These patterns found in institutions are consistent with most patterns found in the literature.

To reduce the variability caused by the lack of systematization, it was suggested that a scoring model based on multi-criteria and a comparison matrix related to Kerzner's strategy matrix (2002) were used as complementary tools.

Scoring models allowed projects to be compared to each other using strategic and aggregated metrics, a comparison matrix allowed for faster and more systematic decisions about projects that fit business goals, and a comparison indicated a qualified diagnostic index. The comparison matrix is based on Kerzner's (2002) strategy matrix and is based on the principle of wanting to invest in the most strategic projects, showing the diagnosis through the actions taken in decision making based on the Strategy Index (IE), range and score model by selecting prioritized needs from a combination of indices. These models are easy to understand, applicable to the initial maturity level of the Medical Practice area and relevant for the composition of portfolio management.

For the preparation of future work, it is recommended to validate the set of standards adopted in these proposals in relation to the Portfolio Management Maturity Level, so that the area can further improve the quality of its assessments by describing the scope of diagnosis and classification of its projects and programs.

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## APPENDIX OR ATTACHMENT

### APPENDIX 1

According to the Project Management Institute (PMI), project portfolio management consists of two sets of processes: the alignment process and the monitoring process.

**Set of Activities for Alignment:** The alignment process aims to build a method of aligning the projects that will be part of the portfolio with the objectives related to the strategy, defining the evaluation components and the rules for building the portfolio. These processes are activated when goals and plans are reviewed, usually at the beginning of the year.

**Set of Activities for Monitoring and Control:** These processes include monitoring pre-defined metrics, to validate portfolio performance in relation to strategic goals and objectives and their expected returns.

Portfolio Management						
Alignment				Balance Score Creation (BSC) of the sector	Create instruments accompanying	Prepare monthly management report in advance
Identification of the Projects	Classification of the Projects	Assessment of the Projects	Selection of the Projects			
Developed portfolio	Balance portfolio	Communication review in portfolio	Authorization of the components	Monitoring and control of the projects that make up the portfolio	Review and enumeration of portfolio results	Monitor changes in business strategy

Figure 2: Portfolio Management

Source: adaptation of “The project portfolio standard”, PMI, 2021

## APPENDIX 1

### Questions

The questionnaire was designed to identify variables and factors in identifying, ranking, and evaluating items to construct selections of candidate items for portfolio combinations. The identities of study organizations and participants will be maintained and the information will be used for academic purposes. Therefore, answer the following questions.

- 1) Describe the macro steps of portfolio management in your area, identifying the main stakeholders and the instruments used in each step. If possible, create a flow that includes these steps.
- 2) How were the projects that will be part of your area’s Portfolio generated?
- 3) According to PMI, during the identification step, the characteristics of each candidate item for the Portfolio composition are detailed. List the characteristics you identify for candidate projects in your area. Do you think these descriptions are sufficient to compare candidate projects? What other features do you recommend including?
- 4) According to PMI, the classification of projects that will make up the portfolio is determined based on strategic plans. Does the statement match what is happening in your area? Describe how your area classified.
- 5) According to PMI, the evaluation step is carried out using criteria related to different aspects of the business (general and specific), enabling the selection of the project that best suits the portfolio. Furthermore, “these criteria must allow the measurement of the contribution of each component to the strategic objectives and the tracking of the generation of expected benefits from each component”. Describe items (general and specific to your field) are and/or must be used to evaluate portfolio candidates in your field. Classify according to their importance and/or priority. Is there any support instrument or technique used at this stage? If the answer is yes, please described and

insert your opinion about the validity of the model, and if not, what characteristics of the instrument or technique do you think are important to construct this stage.

## APPENDIX 2

Project Stages	Responsible	Activity	Activity details	Start	End
Identification	Care Practice Analysts/ Consultants/ Coordinator	Needs identification of the projects	Analyst/consultant/ coordinator receives a request from a manager or director or identifies the need for a new project. The manager records the project needs that have been identified.	Identification of the need for: Improvements to Law Suit; Need to create a new service/product; Communication plan	Identified demand
<b>Detailing</b>	Collaborator elected by management of each area	Demand identification, Categorization	In the template/spreadsheet: Fill in fields: project name, project objectives, goal, current situation (such as are the current processes and tools, connection/integration with other projects, forecast starting and closing the project; selection, classification and strategic initiative	Project Identification	Detailed demand description; classified demand
<b>Analysis/ Follow-up</b>	Coordinators/ Manager	Referring description the demand; Demand classified	Monthly Monitoring: Project evolution	Classified project	Evolution monthly of projects
<b>Results</b>	Coordinators/ Manager	Monitoring the monthly progress of projects	Monthly results achieved; deliverables from period and next steps	Results achieved in the period	Deliverables from Period; next steps; proximity to the goal

Table 6. Demand management

Source: Original Search Results (2021)