

Analysis of maturity for project management in organizations

Análisis de madurez para la gestión de proyectos en las organizaciones

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Abstract

The purpose of this paper is to analyse the maturity of project management at the Faculty of Engineering and Architecture of the University of Pamplona. An instrument of the Kerzner-PMMM maturity model was applied. The respondents are part of the teaching and administrative academic staff. With the model chosen, a medium-low degree of maturity is observed, allowing an opportunity to unify processes and seek alternatives until a high level and success is achieved in the projects.

Key words: model, maturity, management, projects

Resumen

El propósito de este trabajo es analizar la madurez en gestión de proyectos en la Facultad de Ingenierías y Arquitectura de la Universidad de Pamplona. Se aplicó un instrumento del modelo de madurez de Kerzner-PMMM, los encuestados hacen parte del personal docente y académico administrativo. Con el modelo escogido se observa un grado de madurez Medio Bajo, permitiendo una oportunidad para unificar procesos y buscar alternativas hasta lograr un alto nivel y éxito en los proyectos.

Palabras clave: modelo, madurez, gestión, proyectos

1. Introducción

Project management has gained great strength in the world, and every day more companies apply this practice to align their projects with organizational strategies. In this sense, it is important to review the situation of the organization and make an assessment to determine the degree of maturity in project management, which allows to generate improvement plans and develop successful projects. For this, the tool known as Maturity Models is applied. For Kerzner H., (2001) as the project management life cycle develops, it is possible to partially assess the level of maturity of project management in the organization. On the other hand, for the Project Management

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Institute (PMI), the multiple perspectives when evaluating the maturity of the projects allow a certain degree of flexibility to apply the model to the different units in an organization. Prado & Orobio, (2019) perceive maturity models as standards that allow organizations to measure the quality of their processes. The OPM3 model has three dimensions: the management domain, the improvement process experience and the management processes (PMBOK, 2013). For Ruiz et al., (2019) strategic project management systems are an excellent tool for achieving sustainability and improving competitiveness in small and medium-sized enterprises.

Likewise, Hernández, Laguado, et al., (2018) state that project management has a positive impact on organizations that seek permanent growth in their processes, based on the use of methodologies that allow them to have a gradual and efficient improvement. For Laguado et al., (2018), the approach and the good communication in the development of the projects, allows an excellent participation that strengthens the achievement of the proposed goals. Therefore, it is transcendental to conceive organizational maturity as the degree of improvement in the companies or in the collaborators (Andersen & Jessen S., 2003).

A fundamental tool to consider in the management of projects is the adequate management of communications. Several authors consider adequate communication in projects to be valuable. For Hernández et al., (2019), adequate and effective communication in projects allows for excellent results within organizations and projects. In turn, for Hernández, Thomas, et al., (2018) establishing a continuous and transparent communication, in the management of projects in university research, or new business initiatives is essential to achieve success in the proposed objectives. For several authors, the factors that impact on adequate communication demonstrate the level of maturity that exists in organizations in project management (Da Silva & Luciano, 2010; De Souza & Almeida, 2012; Karlsen, 2010). In this sense, Ortiz & Sanchez, (2017) state that weaknesses in the organization, which are not addressed in time, lead to delays and inconveniences in projects, therefore, attending to project management with assertive communication is fundamental and a well-valued tool in organizations.

After the previous considerations, the Colombian institutions of higher education are not alien to these practices, being necessary to emphasize that the processes of investigation are strengthening; this implies appropriation of new knowledge and formulation of projects in marked under guidelines, methodologies and determined standards for the attainment of resources that allow the support and execution of projects.

The Faculty of Engineering and Architecture develops academic projects for each program and presents proposals in internal and external calls for proposals in which professors and students participate. However, access to these processes is difficult due to inadequate communication, inefficiency in the acquisition of financial resources and compliance with the schedule, which is due to the lack of trained personnel and an adequate project management methodology.

2. Methodology

To measure the maturity of projects in the Faculty of Engineering and Architecture of the University of Pamplona, an instrument of the Kerzner-PMMM maturity model was applied, which consists of 5 levels, distributed in 7 sections with 58 questions.

3. Results and analysis

In order to establish the ideal maturity model to be applied in the engineering and architecture faculty, a comparison of the models presented above, CMM (Capability Maturity Model), PMMM (Project Management Maturity Model), and the OPM3 (Organizational Project Management Maturity Model) developed by the PMI was done.

The different aspects of each maturity model are observed in table 1, where variables such as maturity levels, assessment tools, advantages, disadvantages, assessment method are considered.

In the case of the faculty of engineering and architecture, taking into account their resources and organizational capacity, a model is required that is adjusted and allows the identification of opportunities for improvement, strengths, and aspects that weaken project management processes and analyze the results and establish areas for improvement.

Once the analysis of opportunities, strengths, weaknesses and threats is done, it is determined that the model that best suits the organization and in the particular case of the subject of study, for the faculty of engineering and architecture, is the PMMM model, taking into account:

- The model is related to the parameters and standards of project management compensated by the PMI
- There is a relationship in the organizational culture and in the management processes
- Human and social talent are fundamental within the project management process.
- The cost and complexity of application and its applicability is low.
- The assessment tool allows flexibility and can be adapted to the needs of the organization.
- The results allow for improvements in the institution analyzed from the established ranges and levels.

Table 1
Maturity Model Comparison Chart

VARIABLE	MODEL		
	OPM3	Kerzner-PMMM	CMM
Main feature	This model allows to compare current capabilities and best practices for project, program, and portfolio management according to the PMBOK	It is a guide that allows companies to have a competitive advantage by taking project management as a strategic tool towards continuous improvement	It was the first maturity model developed to evaluate software processes
Maturity levels	Standardization	Common language	Initial Basic
	Measurement	Common processes	Standardization
	Control	Unique methodology	Standard methods and techniques
	Continuous improvement	Benchmarking	Standardized performance
		Continuous improvement	Optimized
Method of evaluation	There are several maturity measurements instruments, distributed in questions for portfolios, programs and projects	The instrument consists of 183 questions distributed to analyze each level	Application of the model through distributed practices in the key areas for each process
Evaluation tools	Best Practice Checklists	Questionnaire applicable to the maturity levels determined for the model	Software application
Advantages	Provides a means to advance the strategic goals of the organization through the	It is aligned with PMI standards	Used for software development and maintenance

VARIABLE	MODEL		
	OPM3	Kerzner-PMMM	CMM
	application of project management principles and practices		
	It provides a bridge between strategy and individual projects.	It is applicable to any type of organization	Improves organizational processes
	Provides an extensive body of knowledge about what constitutes	It considers the strategic planning and the context of the organization	Reduces costs and cycle times
	Best practices in organizational project management.	Maturity levels overlap according to the organization's risk	Establish a common language
		Provides clear guidance in the evaluation	Provides a conceptual structure
		Synergy between the organization's methodologies	Increases the chances of achieving goals
Disadvantages	Sequential maturity levels	Search management practices	Your application is only for software projects
	Does not handle a common language		Its application tool is of an evaluative nature
			Does not distinguish partial improvements
			Results are not visible in the short term
Approach	Software projects	All types of projects	Portfolio, programs and projects

Source: Authors

3.1. Application of the maturity model

As a result of the analysis process carried out, the mature model that best suited the engineering and architecture faculty was chosen, and then the application of the instrument, tabulation and analysis of the results was carried out.

3.2. Application instrument

Taking into account the type of institution to which the faculty of engineering and architecture belongs, its organizational culture, it was determined that the instrument for the assessment of appropriate maturity is the maturity questionnaire based on the PMMM model by Harold Kerzner, which was developed by (Álvarez, 2011). The instrument applied consists of 7 sections distributed as follows:

1. Maturity
2. Methodology
3. Tools

- 4. Competencies
- 5. Portfolio
- 6. Multi-project
- 7. PMO

Once the results are obtained by applying the instrument, the faculty can be placed in one of the following levels:

- Level Low: Common language in Project Management
- Level Lower Medium: Common Project Management Processes
- Level Medium High: Common methodology
- Level High: Continuous Improvement

Finally, the results obtained are totalized and placed in the corresponding range, as shown in table 2.

Table 2
Maturity level model PMMM-Kerzner

Range	Level
0 a 213	Under
214 a 320	Lower Medium
321 a 426	Medium High
427 a 640	High

Source: (Álvarez, 2011)

Table 3 shall be considered to determine the level of maturity.

Table 3
Maturity level Section

Percent (%)	Level
0 a 33	Under
34 a 50	Lower Medium
51 a 66	Medium High
67 a 100	High

Source: Authors

The results obtained from the instruments applied were averaged to determine the degree of maturity and can be seen in Table 4.

Table 4
Total Section

Section	Total	Percent (%)
Maturity	178	61.50
Methodology	26	42.70
Tools	23	38.40
Competencies	24	33.90
Portfolio	26	44.00
Programs and Multi-Projects	22	44.50
PMO	21	42.10

Source: Authors

Considering the ranges presented in table 2, the score obtained by the institution under study reaches 320 points, establishing that the engineering and architecture faculty is at the limit of medium-low maturity level. This limit reflects an opportunity for improvement, in addition to establishing actions that enhance the strengths achieving better management and maturity of the projects. Being at the limit of the following range which favors the organization and its collaborators in motivational terms, it is an opportunity to adapt and contribute to the achievement of the objectives and goals proposed in each of the projects managed within the institution.

4. Conclusions

The Kerzner-PMMM model is applicable for any type of organization; it allows to establish in a simple way about the maturity levels of projects in the different companies.

In order to obtain good organizational practices in project management, it is important to know the degree of maturity that these have in the organizations, to establish what level they have and which are the mechanisms or strategies that are better adjusted to obtain a solid degree of maturity in the companies. However, it is important to consider that achievements imply a step-by-step process and that it requires the integration and commitment of the collaborators in the organization.

Through the application, tabulation and analysis of the diagnostic instrument for maturity assessment based on the Kerzner-PMMM model, the score obtained is 320 points, establishing that the faculty of engineering and architecture is at the limit of the medium-low maturity level, this limit reflects an opportunity for significant improvement, it is necessary to emphasize that in the sections analyzed the maturity level is in the medium-high, however, a commitment is required to establish improvement actions in the methodology, competencies, portfolio and multi-projects.

It is recommended to promote the creation of a PMO, where all the information on the projects is centralized, highlighting the importance of a team specialized in project management.

For comparative purposes, it is recommended that the instrument for evaluating the degree of maturity be applied again. This will make it possible to determine points of progress and improvement, which will allow the levels to be raised to level 5.

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