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Fall 11-5-2022

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#### Recommended Citation

Rodrigues, Marcelle Cury; Domingues, Luísa; and Oliveira, João Pedro, "Start Project Management from Scratch in an ICT Department of a Public Higher Education Organization: how to manage change?" (2022). *CAPSI 2022 Proceedings*. 47.

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# Start Project Management from Scratch in an ICT Department of a Public Higher Education Organization: how to manage change?

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## Abstract

The 7th edition of the PMBOK extols stakeholder involvement and acceptance of change as crucial management principles to ensure good project outcomes, as engaged people produce more and better, become more open and flexible to embrace the changes inherent in the project context. From a single case study, the initiation of project management functions in a public organization in the education sector is discussed. The value of this article lies in the connection between theory and practice, as it brings Anderson and Kotter's guidelines applied during an actual project, revealing the benefits and difficulties faced in leveraging and maintaining stakeholder engagement. As a result, it affirms the importance of context analysis to design and conduct changes in the environment where the project takes place, and of breaking the forces of inertia to foster experimentation and gradual improvements in the teams' work dynamics.

**Keywords:** PMBOK7; Kanban; Change Management; Stakeholder Management.

## 1. INTRODUCTION

Project management, in such a changing corporate context, is a relevant topic for the scientific community, the industry and the current job market (Oliveira & Martins, 2018), specifically with regard to stakeholder management and change management practices, because they seek to overcome barriers located on the threshold between what is necessary and what is possible (Azenha et al., 2021) ) to create a more promising project operations environment, capable of motivating people towards achieving the expected results in increasingly challenging contexts (Costantini et al., 2021; Ciric et al., 2019). Such knowledge sharing will benefit other professionals by providing grounding and security to adopt new practices.

Thus, this article discusses the difficulties of an organization without formalized project management, the beginning of the management functions, the changes in the operational context during the execution of a project, as well as the change management strategies used through a case study carried out in a public university teaching institution, during its activities of management and control of projects of Information and Communication Technologies - ICT.

## 2. LITERATURE REVIEW

### 2.1. *Project and Project Management*

The Project Management Institute (PMI) has the most widespread conceptualization of a project: a temporary effort undertaken to create a unique product or service (PMI, 2021). It is a series of activities and tasks performed with a focus on creating value for an organization or a customer. Fernandes et al. (2018) understand projects as open systems dependent on the history and organizational context, thus, there must be project managers with the primary function of choosing approaches, methodologies and sets of practices appropriate to the organization to, in an integrated way, build the strategic assets. In other words, it is essential that project management is guaranteed. Project Management is the application of knowledge, skills, tools, and techniques to organize activities to meet the requirements of a project (PMI, 2021). The next section briefly discusses some of these resources that were used in this study due to their wide acceptance by the market and among professionals working in projects (Artelt, 2021; Dam et al., 2019; Konigbauer, 2021; Oprins et al., 2019; PMI & Alliance, 2017).

### 2.2. *PMBOK, Scrum e Kanban*

Guide to the Project Management Body of Knowledge – PMBOK PMBOK is authored by the PMI Standards Committee. It is a set of project management knowledge that is widely recognized and used in the market (Marnada et al., 2021; Oliveira & Martins, 2018; Pepino et al., 2021; PMI, 2021; Raharjo & Purwandari, 2020).

Scrum is a widely used framework for managing the creation of products and services from an adaptive perspective (Carneiro et al., 2019; Oprins et al., 2019). Together with the Kanban method or separately, they are popular forms of development among companies applying agile approaches (Konigbauer, 2021; Quiña-mera et al., 2021; Szabo & Alzeyani, 2021; Weflen et al., 2022).

The Kanban Method is inspired by the original lean-manufacturing system. One way to think about the relationship between lean, agile, and the Kanban Method is to consider agile and the Kanban Method as descendants of lean. In other words, lean is a superset, sharing attributes with agile and Kanban (PMI & Alliance, 2017, p. 12). Designated by the Agile Guide as a holistic *framework* for incremental and evolutionary processes, Kanban favors systems change in organizations (PMI & Alliance, 2017, p. 104).

### 2.3. *Stakeholder Management and Change Management*

Change management, uses resources, techniques, and tools to enable an organization's transition from its initial state to a desired end state. It is a comprehensive interdisciplinary concept because

of its multi-level nature related to the various changes that take place in an environment (PMI, 2021, p. 244). It is not about managing the changes themselves, but the process to achieve them. Structured, conscious and organized actions to achieve a stated goal (Rostek & Młodzianowski, 2018).

The PMBOK in the current seventh version brings stakeholder involvement as the third principle, and acceptance of change to achieve the envisioned future as the twelfth principle. Such movement intensifies the importance of people and the vision about the change, since the principles permeate the entire project life cycle (PMI, 2021, p. 23).

In whatever organization or company, all projects involve change and have something in common: people (Bray, 2019). No matter what strategy or plan is implemented, success will be governed by the people implementing the plan. If the people who are guiding the strategy are not committed to the change, or worse, are apathetic about the work and the organization, there will be little chance to implement the change (PMI & Alliance, 2017, p. 75).

John Kotter presented the 8-step process for leading change, people-centered, which brings a directive approach in which the need and bias for change originate from the upper levels of the organization, then transmitted to the lower levels through managers to the recipients of the change (PMI & Alliance, 2017, p. 162). The steps are described through concrete initiatives in chapter 4 of this study.

### 3. RESEARCH METHODOLOGY

The main objective of this paper is to relate the influence of change management on stakeholder engagement during the process of building a framework with a set of management artifacts adapted for use in a sector of a public university institution, during its IT project management and control activities

Thus, the question that guided the study was: How can change management be promoted during the initiation process of the project management function within an information technology and systems department?

The research methodology chosen to develop this investigation was the Case Study with an exploratory character and qualitative approach. Conducting case study research is "a linear but iterative process" (Yin, 2015, p.1), which comprises six phases, as shown in the Figure 1.

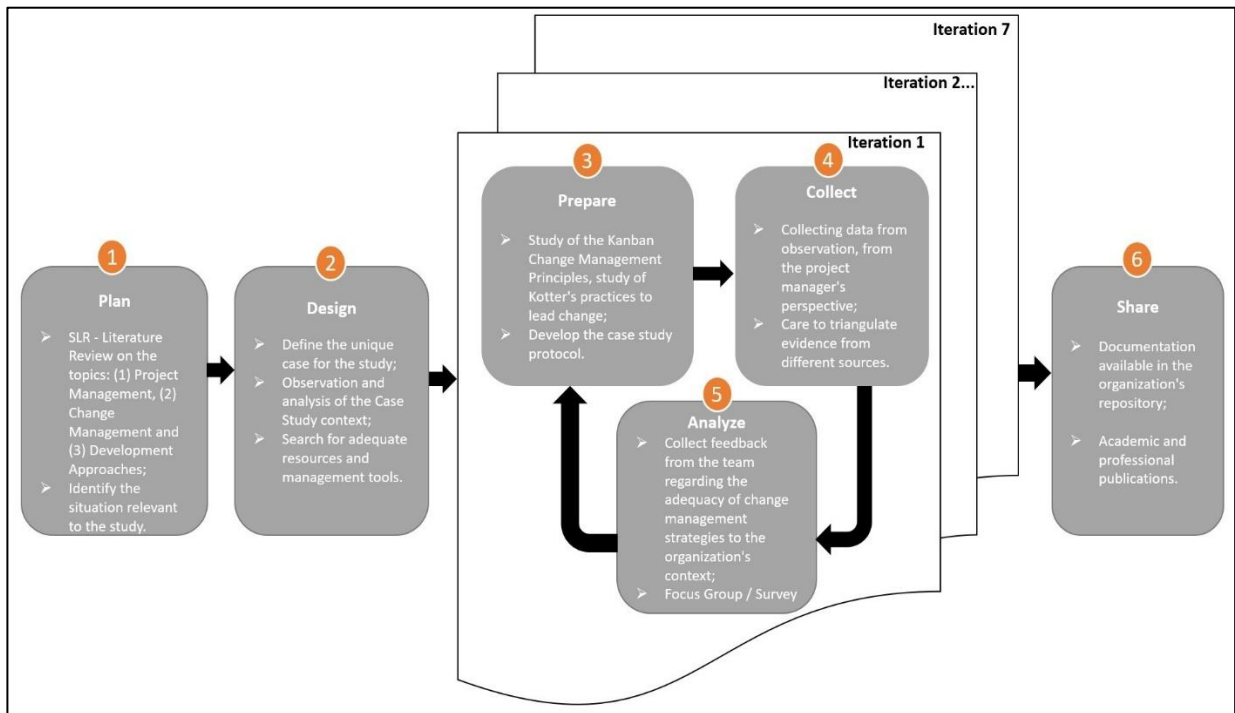


Figure 1 - Conducting case study research. Adapted from Yin (2015, p.1).

In a Single Case Study, empirically, one studies real phenomena, the "how" and "why" of a contemporary event, to understand in depth the case, over which there is no control of behavioral events. As such, this research developed bit by bit over 7 iterations of the preparation (3), collection (4) and analysis (5) phases. Each iteration resulted in the evolution of the study in the field, in parallel to the evolution of the project, the object of this unique case study.

It is important to highlight that during phase 3 an interaction protocol was prepared to ensure the necessary distancing as the researcher worked on the project, a factor that is positive for direct observation and participatory observation, but that without due care could bias the results.

To validate the proposed framework and the change management strategies applied during the project, two focus group meetings were held in an informal environment, with two groups of participants: (1) invited specialists and members of the project committee in question, (2) employees of the teams that developed the project object of this study. During these meetings, in a complementary way, questionnaires were applied to the 13 participants. After sharing their opinions, the participants were asked to answer an *online* questionnaire with closed (Likert) answers on the same topics.

Phase 5 also involved the critical analysis of an expert external to the project, to support the reflection linked to the behaviors perceived and described, in order to ensure the triangulation of evidence, taking advantage of the proper characteristic that the Case Study provides by providing for the application several sources of information and data collection (Yin, 2015).

#### 4. CHANGE MANAGEMENT STRATEGIES APPLIED

##### 4.1. *Context of the organization*

The selection of the single case that is the object of this study arose from the need expressed by the institution's IT Services Department to professionalize the management of the projects carried out, since there were no methodologies or practices applied in this sector until then.

Until now, all the projects were carried out by contractors, and those responsible for the project in the institution had the role of mediating the needs of the interested parties and of managing the service provision contracts.

The institution in question has about 12,000 students and 508 faculty members impacted by the project since they are users. The Department of Computing and Communications Infrastructure Services has 18 employees and had the addition of 5 employees, scholarship students, to carry out this project.

Regarding the skills and competencies of those involved, it is worth noting that there is no previous experience in projects. For some collaborators this is their first professional experience or represents an opportunity for career transition, while for the institution's employees it is their first experience of participating in the development of a product from start to finish. A pilot group with faculty members who made themselves available to use the functionalities and perform tests added efforts by providing feedback so that the project would remain aligned with the users' expectations.

The project team is multidisciplinary and multicultural, as members of three different nationalities, namely Portuguese, Brazilian and Ukrainian, were involved in the project, so there was influence of cultural factors on the communication and social-political issue that required constant adjustments in order not to negatively impact the project deliverables.

##### 4.2. *Start with what you do now*

Kanban recognizes the human aspects linked to resistance to change, so it has three specific fundamental change management principles: (1) start with what you do now; (2) agree to seek improvement through evolutionary change; and (3) encourage acts of leadership at any levels (Anderson & Carmichael, 2016). These principles were the main motivation for adopting the Kanban method for product development in this project and were applied as an integral part of the change strategies implemented.

A large part of the project members already worked in the organization, they already had defined roles and functions, this way was respected and adopted as a starting point, then, after observing the ad-hoc processes, without judging errors and successes, small changes through Kanban practices were proposed to create an improvement cycle, in order to cause the least possible impact, so that

the efforts would always be focused on the product development, and not on the development methodology.

Kanban has six practices, only some of them could be implemented during the Moodle Project. The first was "**visualize the workflow**", for this a virtual board was created in Microsoft Planner with columns to illustrate "states" of activities, all project work was fractioned, prioritized and inserted into cards to provide visibility of work to be done and in progress, as well as the flow and participation of team members.

Next, the practice of "**limiting work in progress (WIP)**" was applied organically, since the project members worked on other activities completely outside the context of the project at hand, so there was already alternation of tasks. The Figure 2 illustrates the two practices mentioned above.

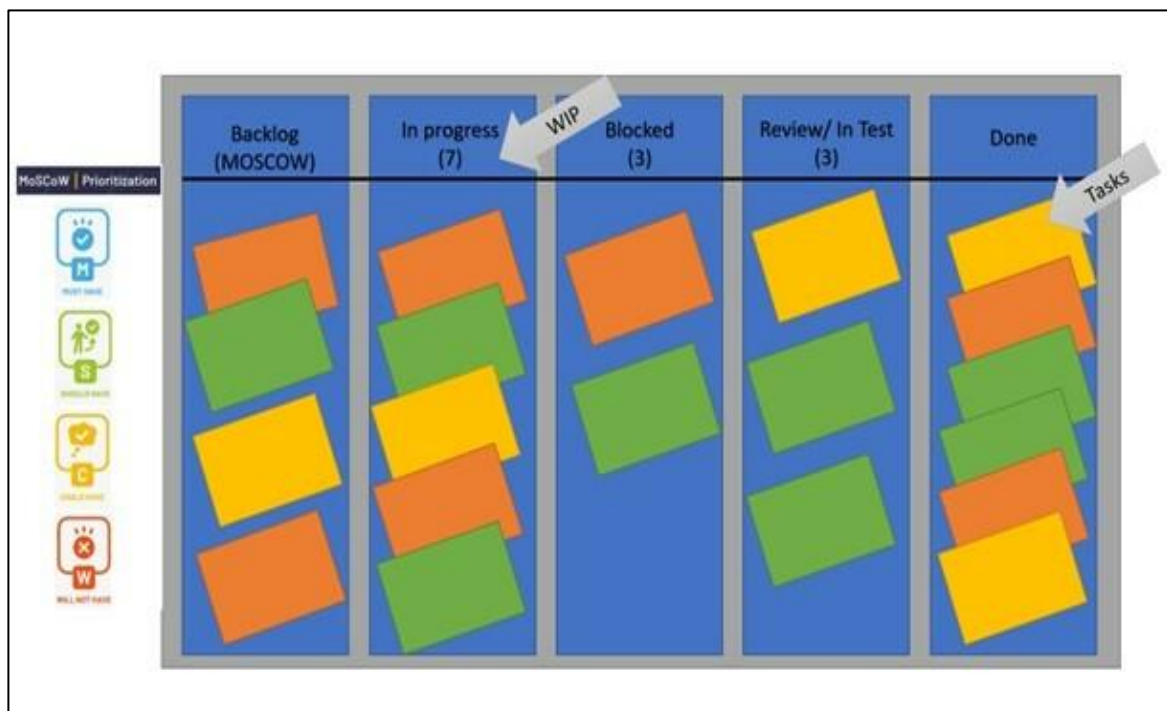


Figure 2 - Example of Kanban Board. Adapted from (Anderson & Carmichael, 2016).

"**Implement feedback loops**" was the third practice was implemented through weekly meetings to compare expected results with the results obtained and adjust.

The last Kanban practice applied in this study was "**improve collaboratively, evolve experimentally**". Problems and bottlenecks were discussed daily with team members to improve the workflow, in this sense acts of leadership emerged naturally during the search for solutions and were encouraged by the supervisor, meeting the third Kanban principle of change management.

Experiments were carried out and small changes (evolutionary change) in the processes caused less resistance to change. In other words, the problems were visible, the group was increasingly emotionally committed to the change, and solutions were achieved. This cyclical and feedback movement resulted in increased confidence in the ability to contribute individually and as a group to the project results.

However, in the search for more assertiveness in the functionalities completion deadlines, it was decided to experiment with Scrum and apply small work cycles (sprints) with the essence of Scrum events, which would also help improve communication among the members of the development group.

#### 4.3. *Eliminate inertial forces*

Competent managers are important for keeping processes under control, but for most institutions the challenge is to lead change. Only leadership can break through the sources of inertia and motivate the actions necessary to change behavior. The solution for change is not an individual, it takes many people to help in the task of leading, each in a modest way, through leadership attitudes in their spheres of activity (Kotter, 2017, p. 45).

The following describes the ways in which each of the eight steps of Kotter's process for leading change was implemented during the project that was the subject of this unique case study.

**"Establishing a sense of urgency"** is the first and fundamental step in acquiring the necessary cooperation. With complacency at high levels, transformations generally go nowhere (Kotter, 2017, p. 49). In the first project meetings and informal conversations during the initial weeks this point was worked on because there was an established *status quo* with an external platform operational for years, well known and accepted functionalities and problems, so it was necessary to reduce complacency until it was broken.

To this end, the director of the sector in which the project took place performed continuous actions to increase the sense of urgency through the purpose and consequences of not doing the project, which at first increased the conflict of ideas and anxiety among those involved.

In the public sector, in general, having everything under control is paramount and there is a certain fear related to changes with such an impact on the organization's business. Note that in the case of an educational institution, the product of the project intends to replace the learning-driven platform, fundamental for both teachers and students. Both horizontally and vertically, the project needed to convince. The director worked on this factor for months, to sediment the idea with upper management, other directors, teachers, and with his own team, to get collaboration and involvement. This leads directly to the second step: **"creating the steering coalition"**.



A leading coalition is always needed—one that has the right composition, the right level of trust, and a common goal (Kotter, 2017, p. 65). As such, the leading coalition for this project brought together the vice-chancellor, the director of the sector responsible for the project, members of the team involved in the project work, and pro-change ambassadors among the faculty, who are the main users, i.e., the customers. Members of the coalition promoted the project within their professional environments to mitigate blockages and increase confidence in the transition between teaching platforms.

The third step is "**developing a vision and strategy**," and then the fourth step is "**communicating the vision of the change**." Clarifying the direction of the change is important because, in most cases, people disagree about the direction, or are confused, or wonder if the change is even necessary (Kotter, 2017, p. 85). The vision of change involved in making this project was born out of the disbelief observed in members of the project team itself, and the impact of each other's opinion on each other. Each point of skepticism was analyzed and reversed through facts, with realistic goals, clarity about the desired change, flexibility in the way of working, and active communication to create an effective vision Kotter (2017, p. 88).

The next step is to "**empower employees for large-scale action**", because discouraged and weakened employees never turn companies into winners (Kotter, 2017, p. 131). Training was a natural move, one of the first measures thought of, and the project members responsible for training, serving the teachers and creating the support website took a course to work with the new system, which helped them feel more secure and bring solutions to the difficulties that arose during the execution of the project.

Each small challenge overcome in the project was converted into motivation, we then move on to the sixth step: "**generate short term wins**." Kotter (2017, p. 139) says that short-term victories build a dynamic that turns neutral people into supporters, reluctant supporters into active helpers, and so on. And that's how it really happened, as the people involved realized the results and evaluated the functionality in the testing phase of the new platform, everyone understood the value of all that change and the great potential for future improvements.

The seventh step "**consolidate earnings and producing more change**", as well as the eighth and final step "**setting new methods in culture**" are measures that transcend the duration of this study, however, the creation of a framework for project management is adherent to these steps, since the tailoring process and change management are part of the practices in this framework.

## 5. ANALYSIS AND DISCUSSION

During the focus group meetings, the participants discussed the strategies for Managing Worldliness. The Figure 3 contains the summary of the positive and negative factors perceived from the sharing of opinions.

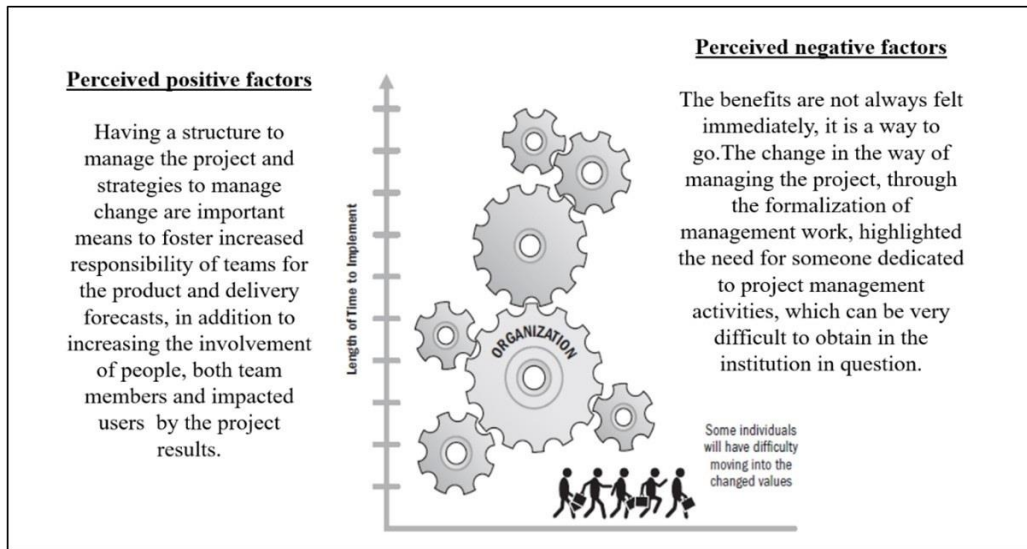


Figure 3 - Factors perceived during the focus group meetings. Adapted illustration from (PMI, 2013).

The Figura 4 brings the responses to the questionnaires with the rating of development practices, change management strategies and the tailoring process as important or very important by most participants, which complements the information gathered in the focus group meetings.

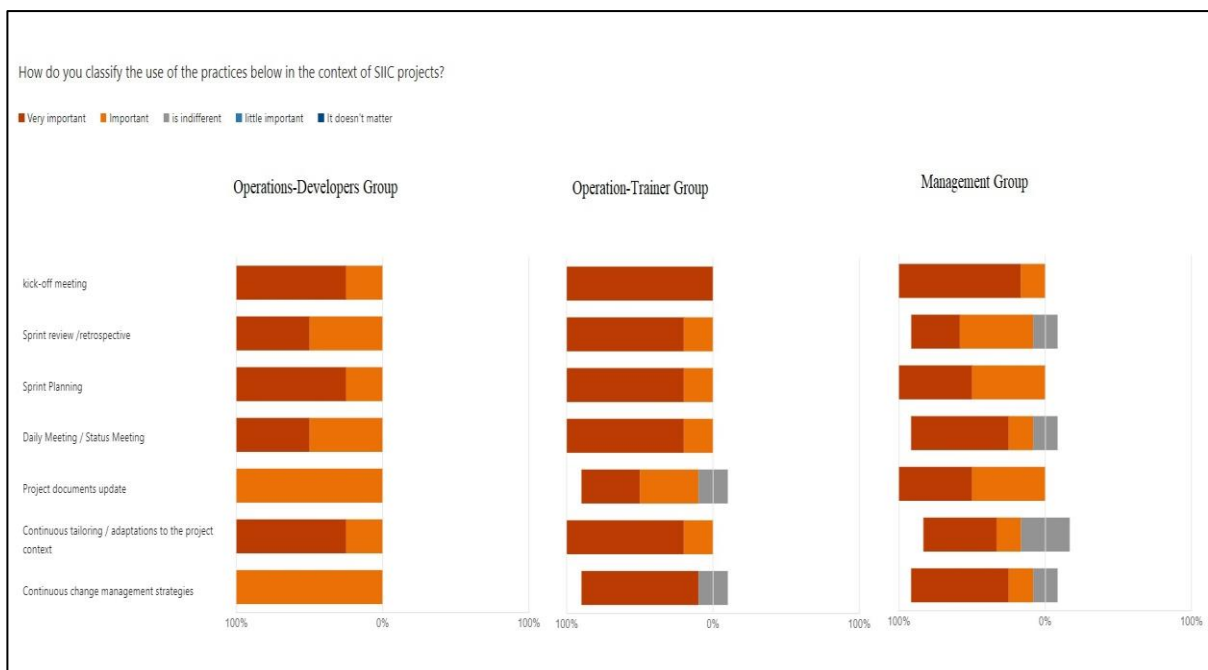


Figura 4 – Survey. Created by the author.

The participants emphasized the importance of applying Anderson and Kotter's practices for change management (Anderson, 2011; Anderson & Carmichael, 2016; Kotter, 2017) so that the objectives of the project could be achieved, since the initial difficulties regarding the insecurity in carrying out an important project for the institution without support from external companies, the doubts about the capacity of the teams and about the acceptance of the new platform by the users were overcome from the implementation of these strategies adapted to the context and designed to manage change during the course of the project

## 6. CONCLUSION

The choice of change strategies is made based on the evaluation of the organization's context. However, there is a consensus that gradual and experimental improvement through experimentation always represents the least risks because it affects the daily routine to a lesser degree and has a lower learning curve (Muniz et al., 2021). In this sense, the most important thing is to encourage the team to create organic and continuous movements to deal with change, one of the ways is to move the forces of inertia.

**THROUGHOUT THE PROJECT THE CHANGE MANAGEMENT WAS CONCERNED WITH THE ACCEPTANCE OF THE PROJECT PRODUCT, AND THIS PERCEPTION OF VALUE WAS BUILT WITH THE USERS, SOMETHING WITHOUT WHICH IT WOULD NOT BE POSSIBLE TO CONSIDER THAT THE PROJECT REACHED ITS OBJECTIVES. THE ADDED VALUE OBTAINED WAS THE GREATER INVOLVEMENT OF STAKEHOLDERS AND THE APPRECIATION OF PROJECT MANAGEMENT AS A TOOL FOR THE INSTITUTION TO ACHIEVE GREATER BENEFIT IN FUTURE PROJECTS. REFERENCES**

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