

# PROJECTS MANAGEMENT FOR INNOVATION. AN ITALIAN CASE STUDY

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**Abstract** - Dealing with an increasingly volatile organizational environment is a serious challenge for any project manager. Project management is a framework which applies knowledge, skills, tools and techniques to plan, coordinate and control a project and its activities. Traditional project management can be characterized as reflecting linear and sequential processes, with stable, known and consistent requirements. Yet most real-world development efforts are much more likely to be conducted in volatile environments. Even seemingly minor changes can produce unanticipated effects, as systems become more complex and their components more interdependent (Sanjivet al., 2005). Projects may have a relatively clear mission, but the specific requirements can be volatile and evolving as customers and development teams alike explore the unknown (Highsmith, 2002). The aim of this paper is to analyse how the unexpected events are dealt during the project implementation and the effectiveness of the approach of Agile project management to changing circumstances or to react to surprises.

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**Keywords** - Communication, Innovation, Project Management

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## I. INTRODUCTION

The main goal of Project Management is to achieve project objectives in reasonable amount of time and costs, meeting the quality standard. The objectives are defined through a continuous process of planning and monitoring on differentiated resources with interdependent cost-time-quality constraints.

In this study, the emphasis will be placed on the scheduling processes within the Agile Project Management and on managing as well as integrating change control in this new software development pattern.

To explore and understand the Agile Project Management approaches we deliberately chose to limit our study to a single enterprise that fulfils the criteria of analysis directly related to what we refer to as a successful business.

The remainder of the paper is organized as follows: paragraph two outlines the background and literature review, paragraph three discusses the research objective and method, paragraph four describes the case study and the final paragraph presents evidences and conclusion providing a critical review of alignment between theory and practice.

## II. BACKGROUND AND LITERATURE REVIEW

In recent decades, businesses have been working in dynamic and evolving environments, characterized by hyper-competition and the need to be more innovative and flexible in front of unexpected changes. The nature of the projects reflects this new context, since the projects have generally become

more complex and with a shorter duration. The market and its customers expect more and more innovative products with better quality (Ahmed et al., 2010). Therefore, creative and implementable ideas need to be generated, which then build the foundation of innovations and new products and services (Herstatt, 2007, p. 4).

In an effort to help project managers and businesses to respond to environmental instability and to the market demand, a pool of consultants and scholars has developed the Agile project management methodology, which allows enterprise to be extremely flexible and fast to meet the needs of customers, while maintaining high quality standards (Beck, 2001).

The highlighted elements clearly outline the goal of the Agile methodology, that is to create an iterative and incremental process, where requirements and solutions mature in the workplace through the collaboration of the development team with the client, aiming at a gradual improvement and adopting a process to successfully complete each phase of the project. Although this methodology originated in software development and is present mainly in this environment, its principles have also been applied in other areas and disciplines. This “concurrent” development approach created an atmosphere of trial-and-error experimentation and learning that ultimately broke down the status quo and led to efficient innovation (Takeuchi, 1986; Chan and Thong, 2009).

The Agile Project Management model is a guide to effectively deal with turbulent environments and contexts where flexibility and responsiveness to change play a key role in planning and execution of

activities. This allows the organization to adapt to changing customer needs and to drive business value to maximise the benefits the enterprise can deliver to them. Agile system aims to provide value to customers by placing priority on the latter part of the manufacturing process rather than initial planning process in order to be flexible to cope with environmental changes (Takeuchi, 1986). For a process to be considered “Agile,” individual iterations should produce some fully functional feature or enhancement (Szalvay, 2004).

One of the most widely used Agile framework is SCRUM, which is an adaptive, iterative, fast and flexible system designed to deliver a product quickly and with a collaborative effort. One of Scrum's key strengths lies in the use of self-organized, power-driven and interdependent teams that divide their work into short and concentrated cycles called Sprints. Each Sprint represents a time-boxed iteration by which the intermediate goal must be reached, and the target value must be attained. Scrum introduces the concept of empirical process control for the management of complex, changing software projects (Szalvay, 2004; Schwaber and Sutherland, 2016).

If project requirements are generally stable, there are typically only minor changes made to the Prioritized Product Backlog throughout development, and Scrum Teams can sequentially complete requirements, which will provide maximum customer value. If there is a Change Request that may have a significant impact on the Sprint in progress, the Product Owner, after consultation with relevant stakeholders, decides whether the change can wait until the next Sprint or represents an urgent situation which may require ending the current Sprint and starting a new one. If the required change is so important that the results of the Sprint would be worthless without it, then the Sprint should be terminated. If not, then the change is incorporated into a later Sprint. Scrum framework clearly specifies that the scope of a Sprint cannot be changed once the Sprint begins.

### III. METHODOLOGY

The analysis of the background and literature has provided the ground for the definition of the research main topic. In order to achieve the aim of research, we deemed it's useful to formalize the problem as questions, in order to be able to describe, with more details, the main topics, on which the research efforts focus.

RQ 1: Does Agile project management let organizations create and/or react to surprises?

In the wording of RQ 1, we have taken the process of managing change requests in Agile Project Management into consideration, especially how Scrum respond to unexpected events and how it

allows organization to deal with uncertainty. Moreover, this research paper outlines the phases of the empirical process control. Empiricism asserts that knowledge comes from experience and making decisions based on what is known. Scrum employs an iterative, incremental approach to optimize predictability and control risk (Schwaber and Sutherland, 2016).

RQ 2: How Agile project management let organization approach the phenomenon of surprise?

In the wording of RQ 2, we have wondered if the presence of managerial expertise and the traditional change control system could be enough to allow the organization to implement an efficient change management. Furthermore, we evaluated how factors within the organizations and the exploitation of feedback can maximise the business value and become the key element to create an innovative outcome.

In order to achieve the aim of research we used the methodology of case study, intended to capture the complexity of the object of study (Stake, 1995; Merriam, 2009).

Among the businesses in the IT field, the case of a Start-up called Musa has been selected because it offers an example of a unique combination of innovation and creativity that let this business to launch an original application and to deal efficiently with some unexpected events and difficulties. Therefore, this case is appropriate to study the capacity of the company to change its structure and strategies in order to approach the phenomenon of surprise. The data were collected through direct interview and secondary sources in more than five months of work. For the purpose of making a thorough analysis, we have conducted our case study based on a semi-structured individual interview with one a founder of the Start-up. Once identified the key information about the functioning of the organization, governance and business strategies, we have asked manager open questions.

#### Case study

Musa is a 3D game that makes learning music easy and fun for children. It is targeted to 6-10 years' old children and runs on tablet, PC and mobile. User's device must be positioned nearby the instrument: the software recognizes every note that is played in real time and gives instant feedback. The mission of this business is to make learning music easy, fun and accessible for everyone and its vision is to be the first music educational software for children in the world. A prototype has been developed and tested with 170 kids in two primary schools, in Ravenna and in Milan. The Alpha version has been developed in collaboration with the graphic company RisingPixel. The Beta went to the Market in the Sprint of 2018.

The business aims are to make 20.000 kids start playing a musical instrument by 2018 and to decrease the percentage of kids who abandon music studies in the first year, from the current 80% to the 40%, by 2020. Musa is generated by the union of many areas of expertise: game design, music teaching and signal recognition. In all those three areas the members of the team are doing research and experiments (for instance, how to adapt a game to be greatly integrated with music learning, and vice versa). Literature on the recognition algorithm is not much developed: instant music recognition software has been developed for specific purposes, but the already existing ones do not comprehend the recognition of chords and have not been devised to be quick and accurate. Musa's uniqueness consists of its mix between play and teaching method, a combination for children who approach playing an instrument for the first time.

During the planning phase, all the activities to develop the Alpha version have been brought together in four work blocks and the duration of each activities has been estimated, so it has been possible to define the start and finish dates. To monitor the work progress, a Burndown Chart has been made for each work blocks and the data has been added gradually. All the people involved in the project couldn't meet face to face every day, but they maintain some more informal, digital communication channels to talk to each other and eventually to discuss some problems.

The optimisation of the recognition algorithm has been one of the most challenging technical issue the team faced. The development of this algorithm is a part of the research of a founder has been working on for long time. For this reason, the planning has been managed with caution and even with far-sightedness in terms of resources to be involved and in the analysis of the alternative plans to pursue. When they noticed that the research path started by one of the software developer for the recognition of the music frequency did not produce the desired result, they have decided to turn to research labs and they have been defining a contract with one of these to be sure to have the monophonic recognition by January. Another demanding issue that came up during the developing phase was to manage the cognitive asymmetry between members who did not have a technical training and the members who studied computer engineering or computer science. This gap has been overtaken by establishing intermediate milestones and by outsourcing some phase of the software development. The engineering studies have been combined with the teaching method's researches in order to improve the music educational software and to obtain an innovative outcome. The game is intertwined with a teaching method, devised especially for Musa by two experienced music

teachers. Each team member has autonomy and intrinsic motivation, in fact each individual teammate thinks and acts in a self-managed way while keeping high team work spirit. The team empowerment and the customer engagement let this business manage the expectation of all the people involved in the project.

#### IV. DISCUSSION AND CONCLUSION

We choose this case study for two main reasons: on the one side its strategies adopted to manage change in the software process development and to enable the firm's growth; on the other side, the strong corporate culture let this company innovatively cope with unexpected events.

All the members took part in the control change board. Despite understanding the business challenges, the cooperation and the flexibility in the change management allowed the organization to provide customer value.

The traditional and formal change control system is not suitable for dealing with the uncertainty in the current dynamic environment; Musa's efficient change management is based on the strong corporate culture, which focuses on cooperation, constant informal communication and the passion for music. The organizational structure is designed according to those principles and the strategies does not only pay attention to delivering the software, but also focused on welcoming client requests for changes. Change is not perceived as something to be feared and avoided, the project team takes time to reflect on the change and reorganises tasks and plans accordingly. Seen in this light, the changes are considered as an opportunity to improve the software and to support the growth of the organization, both of which depend on the corporate culture and on the team members' attitude. The integrated efforts have allowed the organization to manage external and internal environment factors impacting the project. The inner motivation and the determination of the people involved and the willingness to empathise with customers had reinforce the corporate culture and had also allowed the firm to meet market needs faster and better than their competitors. A chance-tolerant business not only respond to change in the marketplace, but also causes changes that keep competitors off balance (Highsmith, 2002).

Our analysis shows why a well-established corporate culture should be a key point of an innovative change management. A strong culture should be reinforced by a clear communication management process and by a strong human interaction. If the set of shared beliefs and values is not implemented correctly, the organizational culture can be a cause of the project failure due to the low degree of participation, lack of cohesion between team members and instability of

the corporate compendium. A highly goal-oriented organization should allow space for innovation, learning and improvement. One of the critical findings of our research is that the constant feedback collected from the customers and the involvement of all the team members through the project have led to the knowledge development and to the co-creation of an innovative outcome.

The study of Musa aims to highlight that project management enable organizations to react to surprise by implementing an efficient and flexible change management system instead of a traditional one with a heavy focus on planning, process and documentation. It provides a lean, versatile and iterative approach to achieve sustainable change and innovation. The integration of all the Agile principles, especially the customer engagement in the project, with the overall business environment allows companies and the project team to get the most out of the unexpected difficulties and events (RQ 1).

To sum up, the efficient and flexible change management model implemented by Musa has followed three steps: communication, collaboration and measurement. First of all, the business value Musa aims to create, and its core beliefs have been announced and understood by all the members of the team and the stakeholders. The visibility and the transparency of the plan have been the basis for the successfully implementation of the efficient communication system. Secondly, the customers have been involved in the development of the software and all the feedback collected have been analysed to show their impact on the project. The feedback-driven planning has focused on weekly stand-up meetings or daily constant informal communication and on the retrospective meeting to collect insights. The collaboration with users has led to develop creative solutions to challenging and unexpected issues and to understand how the overall change is progressing. So Agile project management let organization approach the phenomenon of surprise (RQ 2).

This work contributes to the debate over the management models; it aims to add to theoretical understanding of how and why a combination of change management system, communication management, customers engagement, a reactive feedback system, risk management and the corporate culture enable firms to react to surprise and to introduce innovation. This study would also be helpful

to professional academicians to identify the current trends and future gaps in the field of agile methodologies.

However, the research paper presented here also has its limits. First and foremost, this work solely presents a case study. The material from this paper can be used as the basis for future research as long as there are "significant" revisions from the original. Secondly, it is to be stated that the concepts of the Agile Project Management shaped on the current organizational structure constitutes a first beginning to analyse the process of learnability through a project, the optimisation of the decision-making process based on the feedback control system and the effectiveness of the empirical process control.

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