

DESIGNING A WEBSITE FOR A RECRUITMENT AGENCY WITH PMBOK METHODOLOGY

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Abstract: *Project management refers to a set of activities that contribute to to achieve a successful project: defining the objectives, establishing the team, planning the tasks and providing the resources and deadlines for completing them, continuous assessing the performance and making adjustments when is necessary.*

The case study used the PMBOK methodology and software tools to design a website for a recruitment agency. The project was accomplished by a group of master students guided by a teacher, at Software for Project Management class.

As future work, the authors of this paper aim to continue this experience by enlarging the research study to other projects and by using different project management methodologies.

Keywords: Project management; PMBOK methodology; software tools, recruitment agency.

JEL Classification Codes: M15, L86, O15

1. INTRODUCTION

According to the PMI (Project Management Institute), a project is defined as a “temporary endeavor with a beginning and an end and it must be used to create a unique product, service or result” (PMI, 2016).

The concept of project management refers to “the application of processes, methods, knowledge, skills and experience to achieve the project objectives which could be defined in terms of outputs, outcomes or benefits” (Naybour, 2014).

The main objective of project management is delivering the expected results within the quality requests, planned time, approved costs and taking care of risks.

Project Management has a wide range of applications to projects in all areas, especially in software development industry.

In this paper we will present the PMBOK (Project Management Body of Knowledge) methodology and the Asana application, as a free software based on this methodology and used for managing small and medium projects. We will also demonstrate a manner of applying the knowledge and practical skills acquired during the master course *Software for project management* through an experimental study aimed to create a dynamic website for a recruiting agency.



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2. LITERATURE REVIEW

According to Juneja, project management is “the art of managing all the aspects of a project from inception to closure using a scientific and structured methodology”(Juneja, 2018).

The role of PM is to ensure, after each stage, that the project achieves its technical targets and is financially viable and also, respects the deadlines.

In order to achieve a better efficiency in developing a software, is recommended the usage of a project management methodology (PMM), which unfolds as a sequence of steps, in compliance with the procedures and rules that define the model principles.

The Project Manager and the representatives of the company choose the right methodology and the appropriate implementation technologies, while in the same time spotting the trends, and leverage them for the success of the project

In this section, we briefly analyze the best known project management methodology, PMBOK, by presenting the principles, phases and activities for each stage, to accomplish the project.

2.1. PMBOK methodology

In 1987, the Project Management Institute published the PMBOK (Knowledge Management Project Management) methodology that contains “a set of principles of knowledge in project management” (Project Management Institute, 2016), focusing on project planning and periodic delivering of results.

PMBOK emphasizes the role of project manager, as a leader which establish the team, defines the tasks and their distribution inside the team, control the costs and the real level of project evolution. Also, PM makes the project plan and takes the final decision in case of problems (Matos & Lopes, 2013). PMBOK is based on two types of activities, planning and control, meaning that it requires realistic estimations of the activities, resources and durations and especially, a rigorous controlling schedule. (Banica et al., 2016)

According to PMBOK methodology, the projects are divided into five phases, as follows: (Martens at al., 2013):

1. *Initiating*

Considering the customer’s vision for the project and the business, in which the project manager identifies the client requirements and the problem that the project means to solve.

A feasibility study is conducted to lay out the funding status and the expectations of the organization. At the end of this stage the stakeholders decide whether or not to undertake the project.

2. *Planning*

During this stage, the team elaborates the project management plan, referring to the mandatory information: scope, cost, time, quality, communication and risks.

Also, the project manager will establish the Work Breakdown Structure (WBS) containing the list of activities included in the project, usually represented in graphical form. Gantt chart is the favourite method to represent and tracks the activities, resources, deadlines and important deliveries.

3. *Executing*

The PMBOK methodology cannot specify the technical details of the projects from each domain, but there are several important fundamentals recommended to the project manager at this stage: delivering the results in time and assuring the quality of the project, controlling the activity of the entire team, conduct the procurement contracts, managing the communication with the customer's representatives.

4. Controlling

This is a phase that runs in parallel with the execution phase and aims to maintain the project in the coordinates of planning (schedule, budget, quality), establishing the corrections and allowing the project manager to make the necessary adjustments in time.

5. Closing

During the closing stage, a complete product evaluation is realized and the relevant parties (the customer and the project manager) state the project success, or failure, and make a final assessment concerning the team effort, the budget used, the achievements or the minuses.

2.2. Software tools for PMBOK implementing

There is a wide variety of software tools that implement PMBOK methodology, such as: MicroSoft Project, DotProject and Asana software.

Microsoft Project is a project management software developed and marketed by Microsoft, compatible with the PMBOK methodology, “designed to assist a project manager in developing a plan, assigning resources to tasks, tracking evolution, and budget management”. (Burger, 2017) The project resources are allocated to tasks and the program calculates the cost corresponding to the work time and task difficulty at activity level, and finally at project level. Each resource can be assigned to multiple tasks, in multiple projects, and to each resource can be assigned a lot of resources (Makar, 2010). The accomplishment of an activity is scheduled based on the availability of resources, as defined in their individual programs (Burger, 2017).

The application allows graphic representation of tasks using Gantt diagrams.

DotProject is a web-based tool for managing projects, supporting user management, creating and disabling hierarchical tasks, and visualizing project progress through Gantt charts. The software was developed using the programming language PHP and supports MySQL or ADOdb databases. The main features of the software are included in the basic modules and new functionalities can be added using the tool development framework (Pereira et al., 2013).

Asana is also a software Web-based for project management, including task management, team communication, dashboards and other features which contribute to the successful completion of the projects. Asana focuses on the activity of the project manager, allowing him/her an overview of the team's work, monitoring the project progress and getting automated updates concerning task deadlines or delivery of prototypes.

For a successful project coordination, the project manager must have theoretical and practical knowledge, but also management skills, such as (Aston, 2018):

- 1) Leadership - PM establishes the strategy and the objectives of the project, organizes the project team for operational implementation and evaluates performance; he/her also has the final responsibility if the project fails.
- 2) Communication – PM ensures communication with team members and other stakeholders.
- 3) Planning - PM builds the project plan which is divided into a number of sections, each of them including several tasks and also subtasks; project scheduling also means estimates, timelines, resources plans and aims finding ways to streamline activities.
- 4) Risk Management - refers to the ability to identify risks and to draw up a plan for solve them. This involves assigning an impact level, a cost, a responsible, and using proper mitigation methods.

Using Instagantt as complementary tool of Asana software, a project described by its components, specified in chronological order can be represented by the Gantt diagram (Instagantt Guide, 2017) .

3. DESIGNING A WEBSITE FOR A RECRUITING AGENCY

The case study focused on designing a dynamic Website for a recruitment agency, using the PMBOK methodology and the ASANA project management software.

The website is designed for a virtual recruitment agency, which develops an Internet business and, to this end, promotes the company and offers online services to its clients. The agency has focused on advertising and ordering through the Internet to expand its client portfolio, increase customer service speeds and improve its financial performance.

The project was developed by a team of master students, coordinated by a teacher, during the practical activities of the *Software for Project management* class.

The teacher establishes the project manager and assign different roles to the other members of the project team, according to their skills and knowledge. So, the team is constituted from the project manager, an analyst, a designer, a database developer and a web developer. They all must know the project goal, deliverables and resources. The PM will be responsible for team coordination, planning the activities and resources, monitoring each activity, for achieving the objectives (Banica et al., 2018).

In Table 1 are presented the five sections, corresponding to PMBOK phases and the tasks for each section, identified by the project team.

Table 1. The Sections and Tasks of the project

Section no.	Description	Tasks no.	Task description
1.	<i>Initiating</i> stage - a feasibility study is done, and stakeholders decide on the optimal design option; also, the team establishes the methods and software tools necessary to complete the project	1	Study of feasibility – hardware and software resources
		2	Analyzing methods and tools for project management
		3	Creating the project framework in ASANA and inviting the team members to participate
2.	<i>Planning</i> - PM with the team develops the project management plan containing the deliverables, resources, deadlines, communication and risks; * The Gantt chart is the preferred method to represent the project scheduling and track the activities (Figure 2)	1	Applying the Work Breakdown Structure (WBS) method - the project is divided into sections and tasks / subtasks (Figure 1)
		2	PM establishes the responsibilities of the team members and deadlines for the accomplishment of tasks
		3	Specifying the project components into Asana and viewing the Gantt chart resulted with Instagantt software
		4	Constant and effective communication between team members (briefings, work files, results)

3.	Execution - at this stage, the interim results of the project are achieved according to the planning, accompanied by status reports and possible plan updates;	1	The PM tracks the evolution of the project and make adjustments to the schedule when is necessary
		2	PM coordinates the structure of the database
		3	PM verify database connection to the Web site
		4	Implementing the access page to database, using credentials (username and password) and display information from database
		5	Designing and implementing the site map
4.	Monitoring and control - is a stage that runs in parallel with the execution and aims to make a comparison between the actual performance of the project and the project plan;	1	PM evaluates the results obtained at the completion of each task; the team tests the functionality of database, its connection with web site and verify the web pages and the functionality of links between them
		2	PM follows the deadlines and the involvement of team members
		3	PM can make adjustments to keep the project into the parameters
5	Closing the project - is the final stage including the evaluation of whole project, the activity of each member of the team and concluding whether it was a success or failure	1	PM evaluates the activity of each member of the team
		2	The teacher evaluates the final result of project, the theoretical study and the practical results
		3	The conclusion is about the success or failure of the project

Figure 1 shows the components of the project, grouped in logical sequences: sections, tasks and subtasks.

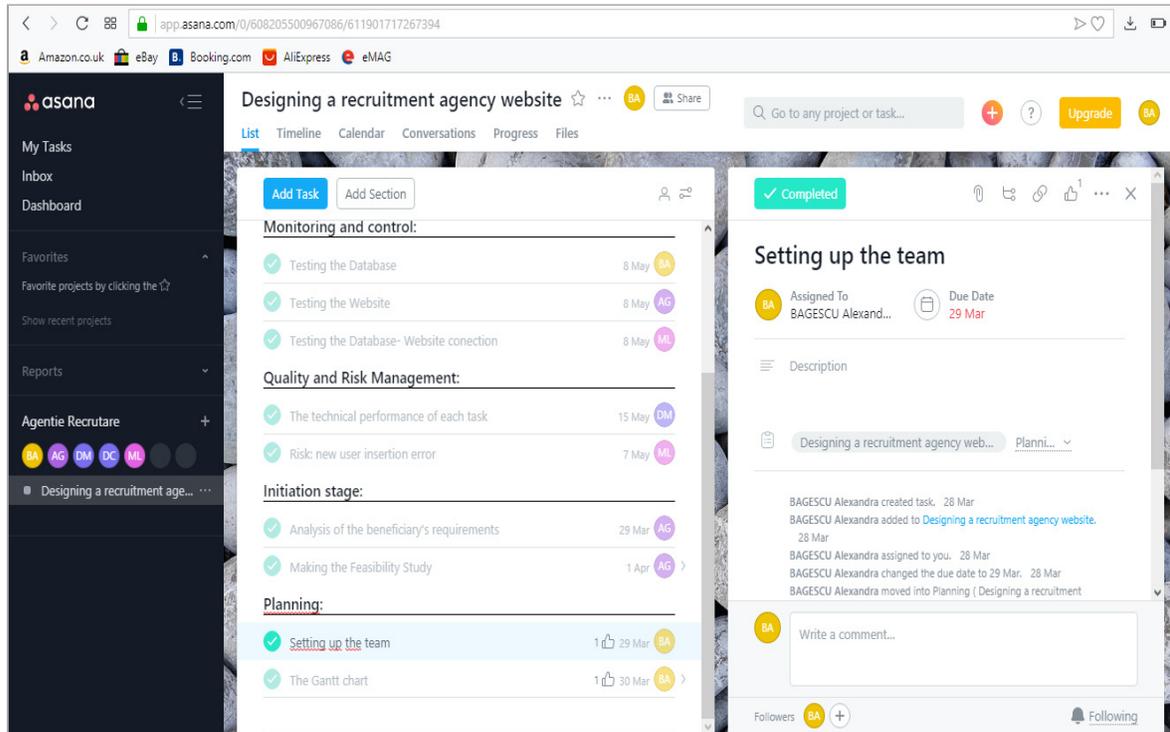


Figure 1. Defining the project sections and tasks, setting responsibilities and deadlines

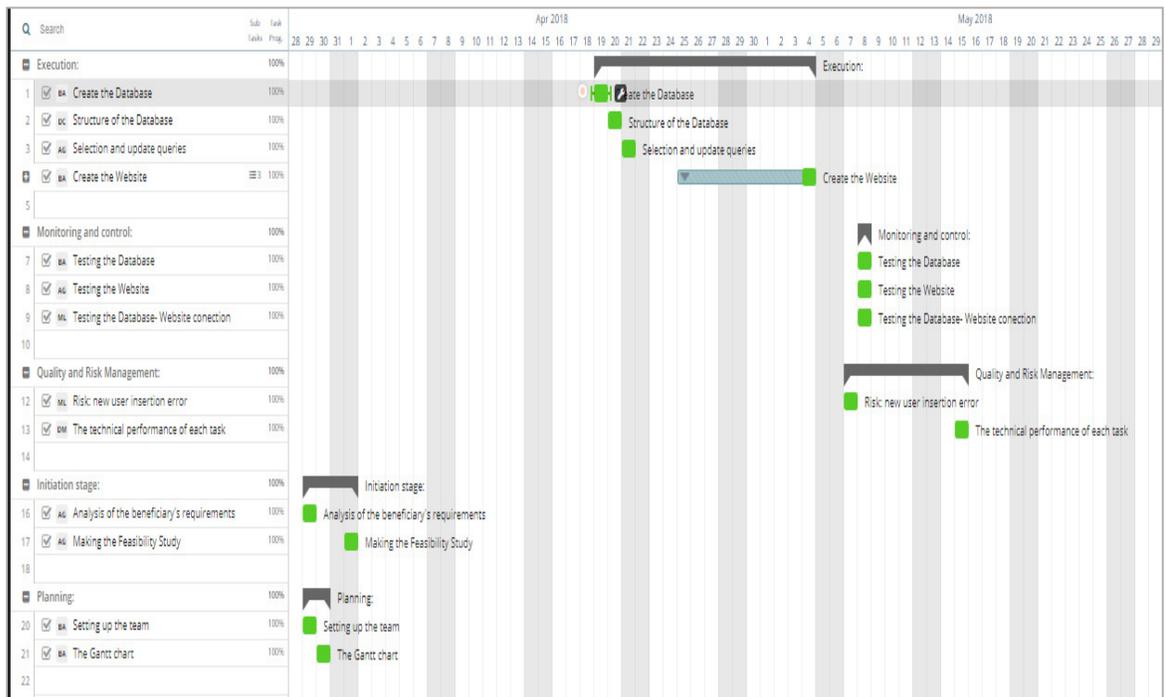


Figure 2. The Gantt chart for project scheduling

To build and test a dynamic Website on a Windows machine, the students used a version of XAMPP cross-platform web server solution, which includes:

- Apache Web server,
- MySQL (or the newer versions MariaDB) – a database system on server,
- PHP – a scripting language for creating Web pages.

Designing a website involves creating a site map, defining pages and linking them through hyperlinks, usually using an html editor and/or edit source pages directly.

Following the completion of the project, the teacher made a full assessment and considered that the result is a functional website that fulfills the objectives. Also, team members worked in collaboration and respected, mostly, the technical specifications and deadlines.

4. CONCLUSIONS

This paper aims at demonstrating how to apply the theoretical and practical knowledge accumulated by master students at various courses them for developing a complex project. The experimental study is based on acquiring knowledge at the *Software for Project Management* master's class, but also on previous courses about databases, web pages and programming languages.

The conclusions drawn from this research project are the following:

- PMBOK methodology is rigorous and less flexible, so the project developed on its basis has a low probability of failure;
- ASANA software is compliant to the PMBOK methodology and helped the team in project scheduling (Gantt chart), monitoring the activities and communication;
- students gained a positive experience of teamwork and learned to solve their problems without teacher intervention

As future work, the authors of this paper consider that is necessary to enlarge their study and test their skills on other projects, using different project management methodologies, implemented by various software tools.

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