

## Teaching Project Risk Management with a Positive Approach

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**ABSTRACT:** This paper presents the importance of learning project risk management with a positive approach. There are specific challenges in educating graduate students especially having in mind they are often with different background and understandings. The purpose of this paper is to show that an approach used in teaching and learning activities with focus on positive risks provides added value to the students. The result is that when they apply in practice this approach the overall added value, they put in their projects, is beneficial. The paper comes to the conclusions that an assessment based on a real project, and the project risks management plan, used as final report and course assignment, helps students to better understand, and practically apply project risk management.

**KEYWORDS** -project risk management, positive risk, opportunity

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### I. INTRODUCTION

Xenophon in *Oeconomicus* (Greek: Οικονομικός) introduced for the first time Management as an art. *Oeconomicus* is a Socratic dialogue principally about household management and agriculture. The opening framing dialogue is between Socrates and Critoboulus, the son of Crito. There, Socrates discusses the meaning of wealth and identifies it with usefulness and well-being, not merely possessions. He links moderation and hard work to success in household management. When Critoboulus asks about the practices involved in management, Socrates pleads ignorance on the subject but relates what he heard of it from an Athenian, named Ischomachus. Approximately two thirds of the dialogue concerns the discussion between Socrates and Ischomachus [1].

Socrates in the 1st Chapter (line 4) asks [2]: "Is it possible, then, for one who understands this art, even if he has no property of his own, to earn money by managing another man's estate, just as he might do by building him a house?". And Critobulus replies "Yes, of course; and he would get a good salary if, after taking over an estate, he continued to pay all outgoings, and to increase the estate by showing a balance.". Which means management either as project management, or as operations management was known, but also was well-paid activity when performed properly by increasing the well-being.

Projects have existed for as long as people have set out accomplishing specific objectives, by using limited resources, and aiming in increasing well-being. But, it was not than until recently that the concept of achieving objectives was seen as implementing projects. Even the terms project and project management became widely spread within just the last 50 years. Key role for the definition of modern project management played organizations, like PMI, which were formed to provide a means for project managers to associate, share information and discuss common problems [3].

In our days teaching project management (PM) is important for students, as future practitioners, and those who will use this for increasing the well-being in terms of adding value to their projects. The goal for students, thus, is to discover ways, and apply their knowledge and abilities to manage resources, schedule, and achieve project scope, by producing project deliverables, and thus accomplishing project objectives.

The course in Project Risk Management was initially designed for graduate level, mainly for the Master Program of Software Engineering of the University of Sofia "Sv. Kliment Ohridski", but now provided also for the Erasmus incoming students at the Sofia University [4].

The aim of the course is to cover the need of better understanding the project risk management process

and practice, as an approach, which will help students to manage project risks better. Unlike similar courses the focus is on positive risks, usually called also opportunities. The reason is that this approach provides added value to the students, because it helps to think out of the box, and search ways to further improve their current overall performance, and not to just limit in keeping the project safe.

## II. PROJECT RISK MANAGEMENT

But, let's first provide some basic background. The first endeavor to develop Project Management Body of Knowledge (PMBOK) was approved by the Project Management Institute (PMI) Board in 1981, and was published in August 1983. After that, PMI's first certifications were awarded in 1984. The next version of the PMBOK appeared in 1986 and an updated version was published in 1987. The PMBOK has been under review on a regular basis since this time and now we have the sixth version published 2017.

So, according to PMBOK a project is defined, as "A project is a temporary endeavor undertaken to create a unique product, service or result" [5]. Thus, the main difference between operations and projects is that projects are unique as scope, and temporary as timeframe. Unique, means that the final outcome of a project has something distinguishing it from other existing products of the organization. When we talk about operations that means we have repetitive elements, which exist in the final outcome of our activity. On the other hand temporary, means a project has pre-defined beginning and end dates. Respectively a project will end, either when its objectives are achieved, or when it is terminated. Usually termination is the only approach after we conclude that it is not possible to meet the project objectives or the initial need of the project does not exist anymore.

Project management (PM) is "the application of knowledge, skills, tools and techniques to project activities in order to meet project requirements" [5]. A project should go through processes: initiation, planning, execution, monitoring and controlling, and closing in order to present an accomplished project management.

Having the above in mind PM should be considered as a discipline by itself, but at the same time different industries customize it according to their needs for the concrete area of application. Respectively, PM when applied in Software Engineering should be considered as the art and science of planning and coordinating human resources, developing and modifying maintainable software artifacts which meet clients' and users' requirements and expectancy within fixed budget and schedule. While managing software projects, software project management shares many activities with other sub-disciplines of project management such as identifying requirements, considering stakeholders' needs and expectations in planning and executing the project, keeping in touch with stakeholders frequently, managing stakeholders in meeting project requirements and creating project deliverables, balancing project constraints which include scope, quality, budget, schedule, risks and other relevant sub-disciplines [5].

Project risk is an uncertain event or condition, and thus a risk can affect the project positively or negatively. There can be several factors or only one factor, which can cause a risk. For this reason, a risk can impact a project in multiple aspects such as cost, schedule, scope, quality or performance once it occurs [5].

The purpose of risk management is to decrease the impact and likelihood of risks, which can affect the project negatively and increase the impact and likelihood of positive events or conditions. Six main activities included in risk management, and are described by Project Management Institute [5] as follows:

### 1. Plan risk management

The purpose is to prepare risk management plan ensuring we will manage successfully project risks. This is achieved as planning helps us to allocate the necessary resources and time for the risk management activities.

### 2. Identify risks

We investigate all possible risks, which may affect the project and document their characteristics. The purpose is by involving all Project team to have full documentation of all possible risks.

### 3. Perform qualitative risk analysis

Based on calculations of probability and impact of risks we prioritize them. This helps us to focus our efforts to the high priority risks, reducing their impact and probability. This is a process going on during all the project life cycle regularly.

### 4. Perform quantitative risk analysis

Having the risks prioritized we perform quantitative risk analysis aiming to reduce project uncertainty. This analysis continues until we reach a satisfactorily acceptable level of risks, according to project needs.

### 5. Plan risk responses

Here comes the process of developing options, which need to both reduce the impact and probability of negative risks, but also enhance positive risks. Here we need to focus to all project objectives (schedule, cost, and scope, for the required quality). Usually, here is where we underestimate the positive approach, and we

focus on being protective for the project. But, we need to think out of the box, and be also proactive in deeply exploring also the positive risks, the opportunities. Building a positive approach will help us increase project value, and deliver better projects.

We need to make sure, that no matter for positive, or negative risks, the proposed responses should be:

- appropriate, according to the risk significance,
- cost-effective, in terms of positive effect,
- realistic, having in mind the project context,
- agreed, with the involved stakeholders, and
- owned, by a concrete defined responsible person.

#### 6. Control risks

Having the risk response plans prepared, we need to track, and monitor the identified risks, but we also regularly try to identify new risks, and evaluate the whole risk process effectiveness during the project lifecycle.

### III. RISK STRATEGIES

When we are dealing with no matter negative or positive risks we choose the option of response to apply based on the impact of each risk on project objectives. So, we have two risk responses, which are common, or with common considerations, both for negative and positive risks. Those **common risk strategies** are:

- **Escalate**

Escalation means we have to deal with a threat or an opportunity, which is considered to be either outside the project scope or that the proposed response option exceeds the authority provided to the project manager. So, the management further required for the risk is provided at program or portfolio level, or by some other part of the organization responsible for it. In other words we have change of ownership of the risks when escalated. Once the communication with the responsible new owner is done, the project team monitors no further the escalated risks. The only thing the project team may do is to keep a record in the risk register, but just for information.

- **Accept.**

Acceptance is a risk strategy applied on, again both kinds, meaning threats and opportunities. That means the project team identifies the risk and in purpose decides not undertake any actions, earlier than risk's occurrence. Such strategy is applied, when the cost effect is low, or when other options are not possible.

We have two differentiations of this strategy passive and active acceptance. Passive acceptance means that we do not undertake any actions apart of documenting the strategy. So, the project team will deal with the risks when and if they occur, and just review periodically the threats and the opportunities to be prepared in case of significant changes. On the other hand active acceptance strategy means we put in place some contingency reserve. Contingency reserves include amounts of time or other resources, which can be used when we consider necessary to handle the respective risks.

The **negative risk strategies**, which are typical for threats or risks with negative impacts on project objectives, are:

- **Avoid.**

Risk avoidance is applicable strategy for threat eliminating or project protecting from risk impact. In many cases project management plan changes are required like schedule extension, or scope reduction. But, in cases where the risks are identified early in the project, avoidance can be applied with measures as requirements clarification or communication improvement.

- **Transfer.**

To transfer a risk means to shift the impact to a third party, both in terms of ownership and respectively further management. Transference requires the third's party agreement, and of course involves some costs, for the party undertaking the risk. To transfer risk we usually use tools like insurance, warranty, or guarantee.

- **Mitigate.**

When the project team applies mitigation as risk strategy, that means undertakes actions to reduce the probability of the risk to appear, or puts it to some acceptable limits. In other words mitigation is a pro-active strategy.

The typical **positive risks strategies**, or response strategies for risks with positive impacts on project objectives, or opportunities, are the following three:

- **Exploit.**

The project team applying exploit risk strategy for a positive risk, focus on actions that make sure, any obstacles will be treated, and this opportunity will be realized. It is important to have clear picture of where this

opportunity comes from, and where the impact will be realized. In this case proactive actions are required that will accelerate the schedule, reduce costs, improve profitability, while keeping the project objectives secured.

- **Enhance.**

Enhance strategy means that the project team focuses on enhancing the triggers driving to the opportunity, and thus achieve the effect of the positive risk. The key elements or milestones for the respective opportunity are followed and accelerated wherever possible.

- **Share.**

Positive risk sharing includes the involvement of third party. The project team involves this third party, having something better, faster, or cheaper to be beneficial for the project. The idea is the third party has this advantage, which can be shared with the project and bring profit to both sides.

#### IV. DISCUSSION

The discipline "Project Risk Management" was introduced in February 2014 in the Sofia University "St. Kliment Ohridski", School of Mathematics and Informatics, for the Master Degree program of the Department of Software Engineering. Now the course is also offered to the Erasmus incoming students.

The philosophy of the course, following that of PMI, focuses on project management and especially on the project implementation risks and on their overall treatment. This is the reason why the assessment of the discipline is mainly formed by something practically oriented, namely the final course report. In the frame of this report, students need to demonstrate their practical skills by implementing a holistic approach to managing their project's risks. As result, students become able to handle cases related to risk management in the implementation of complex projects.

The course covers different aspects of project risk management. The lectures cover the main concepts of project management following the PMI methodology. The student understands the basics of project risk identification, analysis, assessment, and management. The project assignment aims to provide the student with the opportunity to work on real life problem, and apply the methodology learned in real situations.

Students passed successfully the course have, both knowledge about the project risk management concepts, methods and frameworks, but also practical skills for project risk management PMI's methodology.

The assignment topic is pre-approved. Meaning, the students present their proposals in writing. The proposals include the description of the selected project, also indicating the source of the information (for example, a specific project from any projects funding organization like [www.europeaid.eu](http://www.europeaid.eu), or any other similar), and should also describe the main risks to be considered.

The students get extra grades for any positive risks they describe. This schema of additional grade for every positive risk identified and explored focuses their attention, namely on exploring any opportunities.

#### V. CONCLUSION

Teaching and learning project risk management with a positive approach is very important. The proposed approach used in teaching and learning activities with focus on positive risks, applies extra grades bonus for any opportunities that provide added value to the project. But, this approach also adds value to the students' way of exploring project risks. The result is that when they apply in practice this approach the overall added value, they put in their projects, is beneficial. The assessment, based on a real project, and the project risks management plan, used as final report and course assignment, helps students to better understand, and practically apply project risk management.

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