

Thema:

**Hybrid IT-Project Management: Design, Application and Analysis**

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**List of Contents**

- List of Contents..... I
- List of Abbreviations ..... III
- List of Tables and Figures ..... IV
- 1. Introduction..... 1
  - 1.1 Developing Software in today’s technological environment..... 1
  - 1.2 Derivation of the Research Gap ..... 2
- 2. Basics – Fundamental Terms ..... 3
  - 2.1 A Project – A frame to develop Software..... 3
  - 2.2 Project Management ..... 4
- 3. Project Management – Criteria for a successful Project..... 6
  - 3.1 Defining Objectives to a successful project ..... 6
  - 3.2 Project Marketing ..... 8
  - 3.3 Project Controlling ..... 8
- 4. Traditional Project Management..... 9
  - 4.1 The Waterfall Model ..... 10
  - 4.2 The V-Model..... 11
  - 4.3 A SWOT analysis ..... 13
    - 4.3.1 Strengths..... 14
    - 4.3.2 Weaknesses ..... 15
    - 4.3.3 Opportunities and Threats..... 16
- 5. Agile Project Management..... 17
  - 5.1 Scrum..... 18
  - 5.2 A SWOT Analysis..... 20
    - 5.2.1 Strengths..... 21
    - 5.2.2 Weaknesses ..... 24
    - 5.2.3 Opportunities and Threats..... 25
- 6. Hybrid IT-Project Management..... 26
  - 6.1 What is hybrid project management? ..... 26
  - 6.2 Application of Hybrid IT-project management..... 28

6.3 A Case Study: Experience with a implemented hybrid management approach (Petrik, 2015).....	30
7. Evaluation of the three Hypotheses.....	33
7.1 Expert Interviews.....	33
7.2 Evaluation of the Data Material .....	34
8. Discussion of the results of the interviews regarding the evaluation of the Hypotheses.....	39
9. Recommendations and Limitations.....	41
10. Conclusion and Outlook.....	43
Bibliography.....	44
Ehrenwörtliche Erklärung.....	51
Appendix.....	1

## **1. Introduction**

### **1.1 Developing Software in today's technological environment**

In the last several years it has been noticed that businesses lay more and more importance on software to response to globalization and the increased competition on markets. Software has grown to be a vital component in each company, which makes it so important to have effective methods to manage its development (Herbsleb and Moitra, 2001, p. 1-2). The role of software in today's business will steadily increase and will cause competitive behavior amongst developing firms to stay in the fast growing IT sector (Boehm, 2006, p. 2; Gadatsch and Mayer, 2010, p.35). Software gains relevance, not only as a market factor, but also to support company's processes, to heighten productivity, flexibility and quality of products (Coy et al., n.d., p. 18).

According to the fifth national IT summit, the IT sector is the most innovative sector and also the fastest growing by 15 per cent annually (Bertschek et al., 2010, p. 1-2; Coy et al., n.d., p. 18). No other sector is as successful in innovating projects and methods as the IT one (Bertschek et al., 2010, p. 1-2). 40 percent of enterprises in Germany have introduced innovations based on Information-and Communication technologies (ICT), which will eventually lead to the heightened importance of IT-projects in general (Bertschek et al., 2010, p. 1-2). Another factor of the importance states the revenue of software projects. It is 19 percent and follows the telecommunication sector - it is the second largest income source in ICT (Bertschek et al., 2010, p. 11). Also, 2,73 percent of money spent on innovation is going to software development, which is leading in the ICT sector and underlines the importance of new ways to manage IT-projects more flexible (Bertschek et al., 2010, p.12).

Today's technical environment is fast shifting and dynamic; about 90 percent of technical knowledge was achieved in the last 55 years and the pace of future technical improvement is increasing (Collyer and Warren, 2009, p. 2). The market is characterized by rapid changes and customer satisfaction focuses on whether the product can be delivered in time and meets the quality requirements and financial criteria (Collyer and Warren, 2009, p. 3). Investors expect that their project is managed without delay and without obstacles, which is hardly accomplishable in the environment being, because in software development, problems will always happen, either the requirements are not met or the product is not working properly (Lepandatu, 2010, p. 1-2).

Methods for developing software are constantly evolving, because technology is changing and improving fast. Organizational structures, strategies and policies need to adapt to these changes to stay suitable for the environment they are operating in (Nerur, Mahapatra and Mangalaraj, 2005, p.3).

As a matter of fact, the number of projects conducted in the past few years is steadily increasing, while the number of participants of each project is decreasing and most of these projects are ones in the area of software development (Ametepey, Ansah and Aigbavboa, 2014, p. 3-4). According to a study, conducted by Hass, 80 – 145 billion dollars are spent on failed projects every year and 25-40 percent of this loss are caused by reworking on projects. All in all, 2/3 of all IT-projects fail or have been troublesome (Hass, 2007, p.2; Yeo, 2002, p.2). But not only rework causes trouble in projects – 40 percent of problems that are found by the end user, can be led back to miscommunication between the client and the project team (Hass, 2007, p.2). This shouts for a change in the management of these projects to become more dynamic and more flexible, while still maintaining a stable core (Aldushyna and Engstler, 2015, p.1; Ametepey, Ansah and Aigbavboa, 2014, p.4-5). There is a need for stakeholders and the IS society to have better understanding of software development processes to decrease system failures (Yeo, 2002, p.2).

## **1.2 Derivation of the Research Gap**

Due to the increasing expectations of the contractee as well as the growing competition within the IT sector, projects need to perform on a high level (Lepandatu, 2010, p.1). However, that is not always possible with the known methods. Projects tend not to be completed within the time or budget or do not meet the requirements (Lepandatu, 2010, p.1). In order to improve the outdated methods for planning that are still in place as well as the management of projects, new management methods are approached (Lepandatu, 2010, p.1). Nearly every software development is accomplished in the scope of a project. Projects are managed through different methods, mostly with the help of traditional process models (Herbsleb and Moitra, 2001, p.1). This is not very appropriate for IT-projects, because they need more leeway to deal with problems and changes, and for that the agile method was developed (Chin, 2004, p.2). Both methods have advantages and disadvantages and project managers are trying to figure out, which approach is best suited for their project. A new way of developing software forms is the hybrid project management method. It combines features of traditional and agile management in a way that is individually suited for a project.

But what is a viable design of a hybrid project management approach, created from the benefits of agile and traditional project management methods for projects in software development to eliminate weaknesses of each approach and how does it affect the project? And will it be able to fulfill the success criteria of an IT-project effectively? To know, whether or not a hybrid management model is better than the agile or

traditional approach solely, it is necessary to evaluate the effect of it on the efficiency of a project. This leads to the research question that will be discussed in this paper:

*Do hybrid management approaches affect the efficiency/ effectiveness of software development processes?*

To not exceed the scope of this thesis, the focus lies on the methodological aspects of IT- project management. Other relevant factors like employee related issues and team composition will not be discussed here. All aspects addressed are related to IT-projects and are mostly applied in the software development sector.

The structure of the thesis will discuss different aspects of hybrid management methods for IT-projects. In the next chapter, relevant notions will be explained and in chapter three, criteria that are crucial for the successful process of a project are given. Chapter four and five deal with traditional management methods and with agile methods, involving a SWOT analysis for each approach to rule out their respective disadvantages, which lead to the question of the relevance of the hybrid approach. These chapters also include descriptions of the most used techniques of each approach. The core of this paper is the sixth chapter, which describes, what hybrid management methods are, how and where they are applied as well as a case study of an application at a company, from which three hypotheses were extracted. To evaluate these hypotheses, expert interviews were conducted and displayed in chapter seven. The next chapter discusses the results against the background of the theoretical framework constructed before. In the last two chapters the content is summarized and outlooks, recommendations and limitations are given.

## **2. Basics – Fundamental Terms**

### **2.1 A Project – A frame to develop Software**

*“A project is a sequence of unique, complex, and connected activities having one goal or purpose and that must be completed by a specific time, within budget, and according to specifications.”*

- Wysocki, 2009, p.3

Reviewing literature, purpose is a describing term for when something needs to be done and completed - another notion for this description is the word project (Berg, Knott and Sandhaus, 2014, p. 8). A project (more long-term planning) defines and works on a task, which will be of overall benefit (financial, marketing, technical etc.), to the company (Berg, Knott and Sandhaus, 2014p. 8-9). Kuetz describes a project as a proposition which is unique in its conditions. Those conditions are financial, time

## 10. Conclusion and Outlook

Due to the rising relevance of IT projects in the fast evolving ICT sector, management methods will have more and more importance. Only 16,2 percent of all IS projects are finished successfully, which leads to great losses for the company (Yeo, 2002, p.1-2). To do so, different management approaches are present in the IS sector. The agile management approach, which was developed especially for IT projects, loosens up the hierarchy within the development team and gives the smaller instances within the project the possibility to organize themselves. This leads to a very flexible developing method with much iteration and frequent communication with all stakeholders leading to a final product with high and customer specific quality. But because of the loose framework, developing software will take long and it cannot be said in advance, when it will most likely be finished (see chapter 5). The traditional approach on the other hand, has a very strict framework, the team operates in. There are predefined phases that need to be completed chronological. This approach is very clear, but also leaves little room for innovation and flexibility. Especially for developing software, flexibility is important, since many errors and problems will occur in programming software (see chapter 4). Since both methods have their strengths and weaknesses, as shown in chapters 4.3 and 5.2, a new approach is getting more and more popular. This approach is a hybrid form composed from traditional and agile elements. Mostly, the composition consists of an overall traditional frame and the development process within the phases is organized in an agile way. Using a case study by Petrik on how the hybrid approach can be applied, three hypotheses were extracted. By conducting expert interviews, these hypotheses were answered. The interviewees stated that the hybrid approach holds a lot of potential, but also that it takes a lot of time to find the appropriate way of using it. Additionally to that the team members need to be on board and accept the management method for it to work. Also the methods are quite individual and non-transferable, because each project is built differently (see A20). But hybrid will definitely be the future of IT-project management. Also the issue of communication within the team and stakeholders will need more attention, since it is the core factor of whether a project will fail or not (see A29).

Since the study conducted and the literature research showed that using a hybrid management method will make the entire project process more efficient and working on tasks more effective, it will lead to a decrease of project failures in the ICT sector and to better use of project-related resources.