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Bachelor Thesis

On the subject

***Influence of Project Management Methodologies on the Success Rate of IT projects***

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Abstract

[A short summary of the thesis (1/2 – 1 page)]

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List of Abbreviations

PMI Project Management Institute

PMBoK Project Management Body of Knowledge

IPMA International Project Management Association

ICB Individual Competence Baseline

# Introduction

Projects are an important aspect for many current organizations. However, often those projects do not often come to the desired conclusion. Some of these reasons are that they end up being over the budget, they do not complete within required timeframe, the project recipient is not satisfied with the results of the project or the project is cancelled entirely. To overcome these problems many organizations are using project management methodologies to assists the organization in managing their projects.

A project management methodology is a standardized set of rules and activities issued by diverse organizational bodies (Ahlemann et al., 2009, p. 1). An organization or a project team employs a project management methodology to manage the projects during their entire project life cycle. There are many project management methodologies widely used by different organizations (Ahlemann et al., 2009, p. 7) with the expectation that the use will increase the success rate of their projects (Munns & Bjeirmi, 1996, p. 2).

However, the failure rate of IT projects is very high, only 19% of conducted projects are considered a success source and the organization is often left unsatisfied with the results (Standish Group, 2015). Moreover, not all organizations are using project management methodologies to run their projects, often because they are skeptic about its usefulness, or they do know which methodology would be the best for their organization (Ahlemann et al., 2009, pp. 1–2).

This literature review will try to answer the following research question “Do project management methodologies influence the success of IT projects?” To answer this question three separate literature reviews will be conducted. Each literature review will focus on its own topic and together all three will answer if project management methodologies have an impact to the project success rate.

Firstly, this review will analyze how the project management methodology impacts the performance of the project stakeholders, then how this increase in performance affects the project success rate. Finally, it will focus on the direct connection between the project management methodologies and the project success rate. Then a model will be created to show how exactly a project management methodology can impact the performance of the different stakeholders and how this will finally result in an increase to the project success rate.

This thesis intended contribution for academics is to give an outlook of the current state of research on the effectiveness of project management methodologies on the success rate of IT projects. And for practitioners this thesis will give insight on how different project management methodologies affect the success rate of IT projects.

This thesis is organized as follows. The second section will focus on the fundamentals of this thesis, outlining some of the widely used project management methodologies, the stakeholders that employ these methods and common project success criteria. The third chapter will explain the methodology used within this paper and the fourth section will contain the results of the three literature reviews and the created model. In the fifth chapter, the results will be discussed and the last chapter will give a conclusion.

# Foundation

## Project Management Methodologies, Methods and Techniques

Over the last decade many different project management methodologies have evolved that are now widely used by organization to manage their projects. (Charvat, 2003) defined project management methodologies as “A set of guidelines or principles that can be tailored and applied to a specific situation. A methodology could also be a specific approach, templates, forms, and even checklists used over the project lifecycle”. On a similar note (Kerzner, 2013, p. 85) defined a project management methodology as “a repetitive process that can be used on each and every project.” Kerzner (2013, p 87) however also emphasizes that a project management methodologies on its own does not do anything, but that the people inside the organization need to use the methodology to handle the projects. Moreover, they stress the importance that an organization should only “maintain and support a single methodology for project management” (Kerzner, 2013, p. 85).

A number of different project management methodologies and standards have evolved over time. These methodologies are developed by different institutes that creates, releases and maintains the methodology (Ahlemann et al., 2009, p. 293). Often these institutes also offer trainings and certificates for project managers (Florentine, 2015).

Although, there are many different project management methodologies, that on detailed level differ significantly, they are quite similar on in terms of structure and content Moreover, they describe several similarities that can be found across many project management methodologies (Ahlemann et al., 2009, p. 293).. Firstly, they all introduce their own terminology to help communication. They break down the project management into smaller functions. They offer description of the process that will be carried out during the project and finally many project management methodologies “contain organizational models for executing projects” (Ahlemann et al., 2009, p. 293) and introduce new organizational units like a project office. Another similarity that is found across multiple methodologies is described by Kerzner (Kerzner, 2013, p. 86) as that project management methodologies often integrate other processes of the organization into itself. E.g. risk and change management.

There are numbers of different project management methodologies used to management projects available, some of these are, PRINCE2, IPMA Competence Baseline, PMBoK and standards like ISO 10006 or the German DIN 69901-69905 (Ahlemann et al., 2009, p. 296).This thesis will mainly focus on three of the most widely used project management methodologies: PMI PMBoK, PRINCE2 and IPMA.

## Project Management Methodologies

### PMI PMBoK

The Project Management Institute (PMI) has published many standards in the area of project management, including Project Management Body of Knowledge (PMBoK), that was firstly published in 1996 and the latest release in 2013 is the 5th Edition (PMI, 2013, p. 80).

PMBoK defines five types of process groups (PMI, 2013, p. 80).

1. Initiation – authorizing the project or phase
2. Planning – setting the objectives and the course of action to attain those objectives
3. Execution – coordinating the project team and other required resources to fulfil the plan
4. Monitoring and Controlling – monitoring and measuring the progress of the project or phase to identify deviation from the planned course
5. Closing – bringing the project or phase to a proper ending

Moreover, the PMBoK framework consists of nine knowledge areas (Matos & Lopes, 2013, p. 788; PMI, 2013, p. 61) that are the following:

1. Project Integration Management
2. Project Scope Management
3. Project Time Management
4. Project Cost Management
5. Project Quality Management
6. Project Human Resource Management
7. Project Communications Management
8. Project Risk Management
9. Project Procurement Management
10. Project Stakeholder Management

Each of the ten knowledge areas contains the processes that are required to be completed to achieve effective project management. These processed also belong into one of the process groups, creating a matrix structure in which every process can be related to a knowledge era and a process group (PMI, 2013, p. 80).

### PRINCE2

PRINCE2 was released in 1996; its processor was released in 1989 and was derived from an earlier project management standard. Since its release PRINCE2 has become a de facto standard for projects management within the British government and the private sector (OGC, 2011). Foremost, PRINCE2 consists of seven principles. These are “guiding requirements and good practices which determine whether the project is being managed using PRINCE2” (PRINCE2, 2009).

1. Continued business justification
2. Learn from experience
3. Defined roles and responsibilities
4. Manage by stages
5. Manage by exception
6. Focus on products
7. Tailor to suits the project environment

Then PRINCE2 divides a project into seven processes that describe the project lifecycle. Each of these processes include checklists of recommended activities, products and related responsibilities (PRINCE2, 2009, p. 2).

1. Starting up a project
2. Directing a project
3. Initiating a project
4. Controlling a stage
5. Managing product delivery
6. Managing stage boundaries
7. Closing a project

In addition, PRINCE2 defines seven themes that need to be addressed parallel during the project management process. The seven themes of PRINCE2 are:

1. Business case
2. Organization
3. Quality
4. Plans
5. Risk
6. Change
7. Progress

### IPMA Competence Baseline

The third project management methodology addressed within this thesis is the IPMA Individual Competence Baseline (IPMA ICB) created by the International Project Management Association. It current fourth edition was released in 2015 one (GPM, 2015). The goal behind the ICB was to combine several national competence baselines into an international (Ahlemann et al., 2009, p. 293).

The latest edition of the IPMA ICB describes three areas of competence that all apply equally to the project management domain. These three competences are the following (IPMA, 2015, p. 26):

* People competences: personal and interpersonal competences required to successfully partake in or manage a project
* Practice competences: methods, tools and techniques used in projects to achieve success
* Perspective competences: methods, tools and techniques that are used by individuals to “interact with the environment, as well as the rationale that leads people, organisations and societies to start and support projects” (IPMA, 2015, p. 26)

Each of these competence areas consist out of numerous competence elements, the people competence consists of ten elements, the practice competence out of fourteen and the perspective competence out of five (IPMA, 2015, p. 28).

The people competences outline by the IPMA ICB are (IPMA, 2015, p. 29):

1. Self-reflection and self-management
2. Personal integrity and reliability
3. Personal communication
4. Relationships and engagement
5. Leadership
6. Teamwork
7. Conflict and crisis
8. Resourcefulness
9. Negotiation
10. Result orientation

The practice competences are (IPMA, 2015, pp. 29–30):

1. Design
2. Requirements, objectives and benefits
3. Scope
4. Time
5. Organisation and information
6. Quality
7. Finance
8. Resources
9. Procurement and partnership
10. Plan and control
11. Risk and opportunities
12. Stakeholders
13. Change and transformation
14. Select and balance

Finally, the five perspective competences are (IPMA, 2015, pp. 28–29):

1. Strategy
2. Governance, structures and processes
3. Compliance, standards and regulations
4. Power and interest
5. Culture and values

## Project Stakeholder

### Project Stakeholder Definition and Characteristics

In a literature review (Davis, 2014) identified several different kind of stakeholders mentioned in the literature and then classified them into four stakeholder groups that can affect the success rate of a project.

The first group they identified was the project manager (Davis, 2014, p. 196). The(PMI, 2017) defines project managers as employees that “cultivate the people skills needed to develop trust and communication among all of a project's stakeholders” and that they to resolve “complex, interdependent activities into tasks and sub-tasks that are documented, monitored and controlled”. According to (Kerzner, 2013, p. 14) the project manager is responsible for “coordinating and integrating activities across multiple, functional lines.” (Kerzner, 2013, p. 14) highlights three integration activities that the project manager needs to perform, he needs to integrate the activities into the development of the project plan, into the execution of that plan and he needs to integrate these activities necessary to make changes to the plan. Moreover, (Kerzner, 2013, p. 14) say that the project manager is responsible for managing the relationships between the actors within the organization. To be effective as a project manager he needs to manage the relations within the project team and the relation of the project team to the senior management and the client (Kerzner, 2013, p. 15).

The next stakeholder group identified by (Davis, 2014) is the client or the customer of the project. The client or customer is whoever commissions the project and who will use the result of the project or the service. They can be either be part of the organization itself or from an external organization and at the end of the project the customer approves the project’s result (PMI, 2013, p. 31). The customer is often also constantly in contact with the project to “provide feedback on deliverables as they are created and to ensure that the product backlog reflects the current needs” (PMI, 2013, p. 46).

The third stakeholder is the project team (Davis, 2014, p. 196). The project team executes the project according to the plan for that the project team needs to know exactly what they are required to do and when they need to do it (Schwalbe, 2013, p. 11). Moreover, the work of the project team needs to be coordinated, since a project involves many interdependent factors (Schwalbe, 2013, p. 11). During the entire project life-cycle the project team is led by the project manager “by providing vision, delegating work, creating an energetic and positive environment, and setting an example of appropriate and effective behavior” (Schwalbe, 2013, p. 23). The project team is most important during the implementation phase of the project (Schwalbe, 2013, p. 59). (Davis, 2014) added that the project team needs to properly collaborate and communicate within itself and with the other stakeholders.

The last stakeholder group is the senior management or the project sponsor (Davis, 2014, pp. 196–197). The senior management of an organization are expected to act as an interface to the project and assist in the planning of the project and the setting of the project objectives (Kerzner, 2013, p. 19). Moreover, they provide the resources and support for the project and they are accountable for the project success (PMI, 2013, p. 31). During the execution of the project the senior management will assists in resolving existing conflicts and can set the priorities during the project, but for most parts of the project the senior management remains a distance and only interferes when needed (Kerzner, 2013, p. 19). The senior management also acts as the project sponsor and maintains the contact to the client (Kerzner, 2013, p. 464). In the role of the project sponsor, they ensure that the organization passes the correct information to the client and that “money is spent wisely” (Kerzner, 2013, p. 464). Davis (Davis, 2014, p. 197) found that ‘identification of objectives’ is a recurring task among the senior management during project management and that executive commitment and understanding of the project are considered important to achieving project success (Davis, 2014, p. 197).

### Project Stakeholder Performance

(Davis, 2014) also described on how these stakeholders perceive the project performance and its success. According to their literature review, communication between the stakeholders is an important for the performance of the project and having good communication is important for all stakeholder groups (Davis, 2014, p. 197).

Moreover, they found that most stakeholder highly value collaboration between the different stakeholder, the project sponsor only found communication important and not the collaboration between stakeholders (Davis, 2014, p. 169).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Stakeholder | Communication | Leadership | Collaboration | Stakeholder satisfaction | Identifying objectives | Completing the project on time |
| Project manager | X | X | X | X | X | X |
| Customer | X |  | X | X | X | X |
| Project team | X |  | X |  |  |  |
| Senior management | X | X |  |  |  | X |

Table 2.3‑1 Performance criteria of stakeholders

Only the project manager and the customer of the project consider stakeholder satisfaction and the acceptance of the resulting product important in achieving project success (Davis, 2014, pp. 197–197). Additionally, both the project manager and the customer believe that it is for the performance of the project it is important that the all objectives are properly identified and communicated between all the stakeholders (Davis, 2014, p. 197).

Finally, (Davis, 2014) identified another performance criteria that exists across multiple stakeholders. The project needs to be completed on time. This performance criteria is shared by the project manager, the customer of the project and the senior management of the organization.

## Project Success Criteria

### Definition and Success Criteria

Commonly a project is considered successful if the project met the required scope, time and cost targets (Schwalbe, 2013, p. 11). This view of project success can be found across multiple sources (Kerzner, 2013, p. 7; PMI, 2013, p. 35). A project is considered successful if the project team manages to complete the project and if project success criteria’s are fulfilled (Schwalbe, 2013, p. 14). Project success criteria are the goals that a project needs to achieve so that the stakeholders of the project would consider it a success. The three most often mentioned success criteria of a project are that the project is within budget, it gets completely on time and if the project achieved the required scope (Kerzner, 2013, p. 7; PMI, 2012, p. 35, Schwalbe, 2013, p. 14), these three criteria are called the ‘triple constraints’ (Kerzner, 2013, p. 9).

However, the literature often finds that these three criteria are not enough, since even if a project fulfils all criteria the customer still might be unhappy about the results (Schwalbe, 2013, p. 14). To overcome this other criteria than outside of the ‘triple constraint’ model are considered. Schwalbe (Schwalbe, 2013, p. 14) includes two additional criteria: customer satisfaction and that the project meets its main objective. Similarly, (Kerzner, 2013, p. 7) consider acceptance by the user and the quality of the result important success criteria.

### Critical Success Factors

While the success criteria can be used to see if a project met the goals can be considered successful, the critical success factors however are the factors that influence whether the project can fulfil the success criteria (Forster, Rockart, & No, 1989, pp. 1–2). Every year the Standish Group releases a report on the success rate of IT projects. Another key part of the report is the identification and ranking of ten critical success factors that will positively affect the success rate of IT projects (Hastie & Wojewoda, 2015). Those ten are:

1. Executive support
2. Emotional maturity
3. User involvement
4. Optimization
5. Skilled staff:
6. Standard architecture
7. Agile process
8. Modest execution
9. Project management expertise
10. Clear business objectives

Similarly, (Verburg, Bosch-Sijtsema, & Vartiainen, 2013) highlight found four critical success factor that they consider to be the most important ones to achieve project success and that other factors than these were not “directly perceived as important preconditions” (Verburg et al., 2013, p. 77) for project success. The four most important factors that they found were:

1. Trust
2. Clear communication
3. Technical support
4. Corporate support

# Methodology

## Approach

This thesis consists out of three different literature reviews. Each literature review identifies and analyzes the relevant literature from the IT project management discipline with the goal of creating a model to show how the three widely used project management methodologies, PMI PMBoK, PRINCE2 and IPMA Competence baseline, influence the success rate of IT projects. Each of these literature reviews will follow a concept-centric approach as outline by (Webster & Watson, 2002, pp. 16–18).

The first literature review will focus on how these project management methodologies affect the performance of the four stakeholder groups that are involved into the project management process. The second literature review will focus on how the increased performance of each stakeholder can improve the success rate of a project and finally the third review will then focus on the entire picture on how the project management methodologies can influence the success rate of a project.

## Keyword and Criteria Selection

Each of the three literature review will be done separately each using its own set of keywords. The first review focusing on how the project management methodologies influence the performance of the relevant project stakeholders used the following set of keywords: “project management methodology”, “performance”, and “stakeholder”. The second review on the impact of an increased performance of the stakeholders uses the keywords “stakeholder”, “performance” and “project success”. The last review covering how project management methodologies improve the project success rate uses these keywords: “project management methodology” and “project success”.

The three literature reviews only considered articles released after 2010 and only if the article relates to project management within IT projects. The literature reviews were conducted using the scientific databases “Google Scholar” and “IEEE”.

## Data collection

After defining the keywords and choosing the databases, the three literature reviews were conducted by entering the sets of keywords into the databases. Then after a identifying a few relevant articles, a forward and backwards search was conducted using these articles to identify articles that weren’t found using the chosen set of keywords.

In total thirty different articles were identified during the literature search. Out of these articles fourteen focused on how project management methodologies impact the performances of the project stakeholders, nine analyzed how this increased performance can improve the project success rate and seven belong to the third topic on how project management methodologies can impact the project success rate.

## Data analysis

This literature review is following a concept-centric approach as outlined by Webster and Watson (2002) to analyze the identified literature. For each of the literature reviews an own concept matrix was created and the articles were sorted into these matrixes to give an overview of the project management concepts addressed in each article.

In these matrixes, the articles are on y-axis and on the x-axis are the relevant keywords for this literature review. For each article the keywords that are addressed within the article are ticked off. This way a few articles that cover all keywords were identified. These articles were then used as the main sources for the result section of this thesis. The remaining articles were used to support the claims.

# Results

## Impact of Project management methodologies to the performance of the project stakeholders

### Overview

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Stakeholder | Communication | Leadership | Collaboration | Stakeholder satisfaction | Identifying objectives | Completing the project on time |
| PMI PMBoK |  |  |  |  |  |  |
| PRINCE2 |  |  |  |  |  |  |
| IPMA CB |  |  |  |  |  |  |

Table 4.1‑1 Impact of Project Management Methodologies on the Stakeholder Performance

### Impact to Communication

Each of the three project management methodologies have different ways on improving the communication between the stakeholders of the project. In PMI PMBoK communication is addressed within the knowledge area “Project Communication Management” (PMI, 2013, p. 61). This knowledge area consist out of three processes ‘plan communications management’, ‘manage communications’ and ‘control communications’ (Monteiro de Carvalho, 2013, p. 5).

### Impact to Leadership

### Impact to Collaboration

### Impact to Stakeholder satisfaction

### Impact to Identifying objectives

### Impact to Completing the project on time

## Impact of Stakeholder Performance to Project Success

### Overview

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Stakeholder | Time | Budget | Scope | … |
| Communication |  |  |  |  |
| Leadership |  |  |  |  |
| Collaboration |  |  |  |  |
| Stakeholder satisfaction |  |  |  |  |
| Identifying objectives |  |  |  |  |
| Completing the project on time |  |  |  |  |

### Impact of Communication to Project Success

### Impact of Leadership to Project Success

### Impact of Collaboration to Project Success

### Impact of Stakeholder Satisfaction to Project Success

### Impact of Identifying Objectives to Project Success

### Impact to Completing the Project on time to Project Success

## Impact of project management methodologies to project success

### Overview

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Time | Budget | Scope | … |
| PMI PMBoK |  |  |  |  |
| PRINCE2 |  |  |  |  |
| IPMA Competence Baseline |  |  |  |  |

### Impact of PMI PMBoK to project success

### Impact of PRINCE2 to project success

### Impact of IPMA Competence Baseline to project success

# Discussion

# Conclusion

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Appendices

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