

Joni Keränen

THE EFFECTS OF LEADERSHIP ON IT-PROJECTS



TIIVISTELMÄ

Keränen, Joni Matti Oskari
Johtamisen vaikutus IT-projekteissa
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Ohjaaja: Palonen, Teija

Projektin hallinta ja johtaminen ovat olennaisia tekijöitä IT-projekteissa. Näitä tekijöitä ei ole kuitenkaan tutkittu tarpeeksi tehokkaasti, sillä suuri osa IT-projekteista epäonnistuu huonon projektin hallinnan tai johtamisen seurauksena. Projektijohtajat käyttävät projektin hallinnan metodeja projektin omistavan organisaation toimesta. Projektin hallintaa on tutkittu intensiivisesti, jotta voitaisiin saavuttaa sekä suurin mahdollinen suorituskyky projekteille, että paras mahdollinen laatu projektien tuotteille. Hallinnolliset osa-alueet kuten prosessien hallinta ovat hyvin tarkasti määriteltyjä ja niitä varten on kehitetty useita erilaisia työkaluja. Johtamisen ominaispiirteitä kuten projektitiimiin kohdistuvaa vaikuttamista ja ihmistenvälisen suhteiden luomista varten ei kuitenkaan ole sellaisia työkaluja. Tämä johtuu siitä, ettei näiden merkitystä ja vaikutusta ole määritetty tarkasti. Tutkielmassa selvitettiin johtamisen ominaisuuksien vaikutuksia projektien tekemiseen ja onnistumiseen aikaisempaan kirjallisuuteen perustuen.

Tämä tutkielma keskittyi johtamisen ominaispiirteisiin projektin hallinnassa. Johtamisen ominaispiirteitä tutkittiin transaktionaalisen, transformaation ja servantin johtamisteorian kautta. Johtamisen tärkeimmät piirteet määritettiin näiden teorioiden kautta ja niiden vaikutusta arvioitiin suhteessa projektien suorituskykyyn ja projektien onnistumiseen. Johtamisen ominaispiirteitä ovat vaikuttaminen, visiointi, luottamus, kunnioitus tai uskottavuus, riskien jakaminen tai delegointi, yhtenäisyys sekä mallin näyttäminen. Nämä kompetenssit toistuvat useassa johtamisen vaikutukseen liittyvässä tutkimuksessa ja niillä on eroavaisia vaikutuksia IT-projekteissa. Tutkielmassa havaittiin, että näiden johtamisen ominaispiirteiden vaikutukset IT-projektin onnistumiselle ovat selkeitä. Näiden avainkompetenssien vaikutukset projektin eri vaiheisiin ovat myös huomattavia, mutta niitä on vaikea tutkia johtamisen ominaisuuksien erilaisten määritelmien takia.

Asiasanat: projektin hallinta, johtaminen, IT-projektit, projektin elinkaari, johtamisen ominaispiirteet

ABSTRACT

Keränen, Joni Matti Oskari

The effects of leadership on IT-projects

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Project management and leadership are essential aspects of IT-projects. Nevertheless, these aspects of projects haven't been studied enough, as a large amount of IT-projects fail due to the lack of qualified project management and leadership. Project management is a tool operated by project managers for the benefit of the organization conducting the projects. To ensure the maximum performance and quality products from projects, the field of project management has been studied vigorously. Managerial aspects such as process management are well defined and have numerous tools to operate them. Leadership qualities such as influencing the project team and creating interpersonal communications however do not have clearly defined frameworks, as the effects of these qualities are not fully established. This paper analyzes effects the key competencies of leadership have on project success and performance via literary review.

This thesis focused on the leadership factors of project management. Leadership competencies were examined from transactional, transformational and servant leadership theories. The key qualities of leadership were defined from these leadership theories and their effects were discussed in the context of project phases and success criteria. The key qualities of leadership were influence, vision, trust, respect or credibility, risk-sharing or delegation, integrity and modeling. These qualities were identified from numerous studies and are shown to have varying impact on IT-projects. The research concluded that the effect of leadership on the success of IT-projects is apparent. The effect of leadership on different project phases is also imminent, but the key qualities all affect project performance differently and are very difficult to determine from the varying definition of leadership itself.

Keywords: project management, leadership, IT-projects, project life cycle, leadership competencies

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1 INTRODUCTION

In the world of information technology (IT), the products and services the IT-companies provide are done via projects. Projects are an organized way of producing unique and carefully planned products (Project Management Institute, 2013, p. 3), which makes projects a very natural fit for IT based ventures. Even though project management and leadership have been studied vigorously in the last two decades, a considerable percentage of IT-projects fail in one way or another. According to a survey (Bonnie, 2015) conducted in 2015, only 64 % of all projects succeeded in meeting their original goals or business objectives. The study lists the most prevalent reasons for failure as unclear objectives and lack of business focus, poor planning and management, lacking skillsets in project teams, the technical complexities of the projects and finally unknown reasons. Therefore it is necessary to examine the phenomenon of failure in IT-projects from different perspectives.

The Project Management Body of Knowledge (Project Management Institute, 2013, p. 3) defines projects as a “temporary endeavor undertaken to create a unique product, service, or result.” This means that projects differ from everyday processes like billing and other financial transactions in many ways. Firstly, projects are inherently unique entities, which have a definitive beginning and an ending. Furthermore, projects have their own budget, allocated teams and other resources and most distinctively their own success factors. The success factors are determined by the project manager, in conjunction with allocated resources and projects stakeholders’ wishes.

Projects are the dominant method of product creation in IT because the environment in which IT-projects are conducted varies dramatically from project to project. The complexity of related IT-systems for one means that there are rarely any standardized processes which could be used from project to project. There is also the matter of project stakeholders commonly having unique goals and demands for each individual project. These variables are the reason why projects are so common in IT related businesses and why there is a huge demand of qualified project managers to lead the projects towards their goals.

The purpose of this bachelor's thesis is to evaluate the effect of leadership on IT-projects. Robbins and Judge (2015, p. 368) define leadership as "the ability to influence a group toward the achievement of a vision or set of goals." This definition contrasts management from the point of authority: management is used by a declared leader of a group by applying managerial methods such as scheduling and other planning mechanisms to help the project succeed. According to a study by Fortune & co. (2011, p. 571) the use of project management methodologies such as risk assessment tools have been on the rise. However, the use of methodologies by themselves haven't led to better success rates of projects in general. The managerial processes can be trained and evaluated by several frameworks such as PMBoK, but leadership is the less quantified aspect of project management.

There are two main research questions:

- What is the significance of leadership for the success of IT-projects?
- Is there a difference in effectiveness of leadership during different phases of IT-projects?

For answering these research questions, leadership is defined based on several prevalent leadership theories. This study will be conducted as a literary review. The literature is obtained by searching certain key words from Google Scholar and by studying commonly used frameworks. Key words used in research are project management, leadership, leadership theories, organizational culture and project life cycle. The definition of projects, project leadership and project success are determined from this research to help evaluate the effects of leadership. The researched studies regarding leadership will be examined in conjunction with the definition of leadership determined in this paper.

The structure of this thesis is as follows: the second chapter contains information regarding IT-project management, which is essential to finding answers to these research questions. The third chapter focuses on various studies conducted regarding IT-projects and their success or failure. The fourth chapter is reserved for the conclusion and discussion of the findings.

2 IT-PROJECT MANAGEMENT

Managing projects is a complicated subject and there are various methodologies which have been constructed to define project management. According to a global survey on project management (PWC, 2012, p. 18), 74% of all surveyed companies used a project management methodology in their projects, but the methodologies vary by geological and cultural differences. The most commonly used framework is Project Management Body of Knowledge (PMBok). The book (Project Management Institute, 2013, p. 5) defines project management as “the application of knowledge, skills, tools and techniques to project activities to meet the project requirements.”

Project management is profoundly dependent on the organizational culture of the company conducting the project. Robbins and Judge (2015, p. 512) define organizational culture as a combination of seven main features: innovation and risk taking, attention to detail, outcome orientation, people orientation, team orientation, aggressiveness and lastly stability. In other words, the culture of an organization forms from set strategies regarding these main features, which are carried out in varying intensity. Understanding the prevailing culture is an asset to the employees, as they therefore recognize what is expected of them and their work.

Having a strong organizational culture is a large factor in IT-projects. Gu & co. (2014. pp. 1171-1172) discovered in their study that environmental pressure is a moderating factor to organizational culture having a positive relation to IT-project performance. In other words, if the project environment is convincing the project managers and employees to work regarding their organizational culture, the projects have a greater performance rating. Because of the high number of projects in IT, it is essential for companies to create a viable organizational culture to succeed in their endeavors regarding IT-projects.

This chapter discusses the nature of IT-projects and the general distinction between leadership and management. The key qualities of leadership are also determined for a later chapter.

2.1 IT-projects

Projects are carried out in a life cycle, which contains four generic phases: initiating, planning, executing and closing (Project Management Institute, 2013, pp. 38-39). These phases are usually divided into more specific segments, depending on the project at hand but can also be condensed into fewer phases, if the scope of the project is small enough. For the purpose of this thesis the generic phase structure in project life cycles will be used to determine the effect of leadership in projects when applicable. Figure 1 illustrates the weight of each project phase of a life cycle:

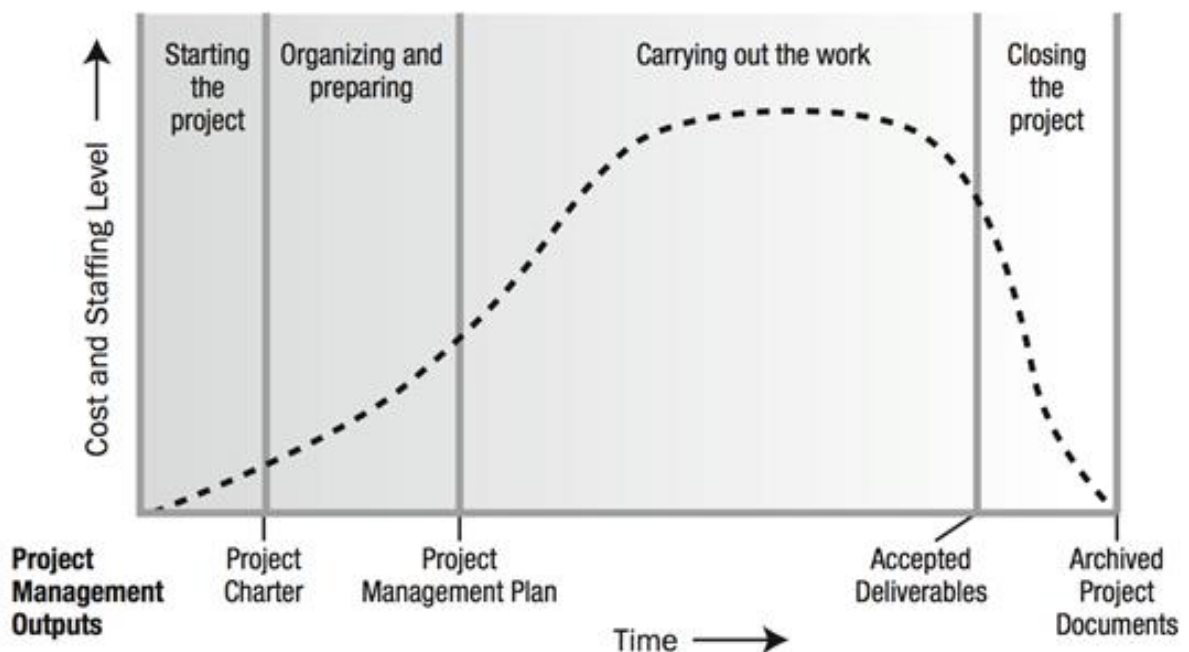


FIGURE 1: Typical cost and staffing levels across a generic project life cycle structure (PMBok, 2013, p. 39)

All projects start from the initiation phase. This phase consists of all the processes, which are performed to define the new project. As stated in the PMBoK (2013, p. 424) the purpose of these processes is to “help to set then vision of the project-what is needed to be accomplished”. During the initiation phase processes, preliminary scope and budget are defined and dedicated by the project organization, the internal and external project stakeholders are established, and the project manager is appointed to supervise the whole project (2013, p. 424). A project charter is developed, which gives the project a formal authorization and the project manager the permission to use resources the organization provides.

The planning phase follows the project initiation. The phase includes all the planning that is necessary to carry out the project to its acceptable conclusion: the scope, resources, objectives, communications and the activities of the project are defined fully (2013, p. 427). If the project is met with substantial ob-

stacles or changes which would contradict the plans made in this phase, the planning processes can be revisited to fulfill the needs of the project.

The execution phase contains all the processes which are involved directly in making the product of the project. These processes include managing and developing the project team and performing all the plans made in the planning phase (2013, p. 444). These processes can be divided into two categories: executing processes which are responsible of the product itself and monitoring and controlling processes, which are responsible of evaluating whether the plans and the execution are in line with each other and if changes are necessary to either feature (2013, pp. 444-450). According to the PMBoK (2013, p. 450), the managing and controlling processes enable evaluating the project performance in real time and facilitates the project manager to make needed changes to their project.

The closing phase consists of all the processes, which are conducted to end all other actions in the project; The documentation of the project is reviewed, verified and archived, project team is assessed for their work and the project can be acceptably closed according to their stakeholders (2013, pp. 459-461).

Understanding the basic project life cycle is important to understand the effects of IT-project management fully: as projects are conducted in phases with different processes, various kinds of skills are required from the project manager to meet the needs of the project. In addition to the general project life cycle, there are other methodologies which are designed to be used in specific instances for projects.

Predictive life cycles are methodologies, in which processes of a project are done in a more defined sequential order while the scope, time and other resources are determined as soon as possible (2013, p. 44). Another way to implement IT-project management are iterative and incremental life cycles wherein the product of the project is provided from each iteration of the cycle, which can be executed multiple times to provide the product the stakeholders want (2013, pp. 45-47). This method is used for larger products, as feedback from many different stakeholders is needed to get the optimal results from the completed project. Finally, there are adaptive life cycles which are also known as agile methods. According to the PMBoK (2013, p. 46), agile methods are also iterative and incremental in nature, but agile methods have a certain strict time limit assigned for them for every iteration. An agile development life cycle would for example look like this (figure 2):



FIGURE 2: Simple graph of an agile development life cycle (SmartSheet, 2016)

In agile development, the projects are conducted in short cycles, which follow one another. Requirements phase is corresponding to the initiation phase, designing and developing phases are similar to the execution phase and finally releasing and tracking in conjunction to monitoring are comparable to the closing phases. These definitions are not absolute however, as agile development is incremental and iterative by nature, so deviation from the generic phases is encouraged (2013, pp. 45-46).

Agile methods such as Scrum are popular in IT related projects because it enables smaller subsections of project teams to form and work together in specific tasks. In Scrum-development, the projects are conducted within very strict time limits, to produce something in definitive intervals (Sliger, 2011). These products do not have to be final, as if the stakeholders defining the project success criteria have not received a product equal to their standards, a new cycle can begin. According to Sliger (2011) Scrum teams are smaller than normal project teams, so one project team can consist of several smaller Scrum teams, to help with communication and coordination of the specific tasks.

2.2 Leadership and management

Project management requires a large set of skills, which can be different in importance and effectiveness from project to project. Projects have innately huge number of variables, which makes project management a challenging task. Project managers are required to be able to not only manage the project and its documentation, but also lead the people who work with the project and communicate with the project stakeholders. Skulmoski and Hartman (2010, pp. 61-

80) identified key attributes for their study of project manager competency for every project phase the project manager needs in their work. The competency groups were personal attributes, communication, leadership, negotiations, professionalism, social skills and project management competencies. This division indicates the need to differentiate from a vast amount of qualities that are needed from the project manager.

This paper focuses on the leadership aspects of project management. Even though the processes of project management are very thoroughly defined by multiple different frameworks, there is no clear consensus on what kind of leadership is optimal in IT-project management (Thite, 2000, p. 240). As stated before, IT-projects are naturally complex and require a vast set of skills for effective project management. The leadership attributes to guide and motivate the project team, being a visionary and being able to communicate ideas are all important in shaping projects, but haven't been studied enough to reduce the amount of failing IT-projects.

The leading model of leadership styles categorizes leadership into two bigger subsections: transactional and transformational leadership. According to Robbins and Judge (2015, p. 382) transactional leaders lead by giving their followers clear goals and task requirements, in contrast to transformational leaders who aspire to encourage their followers to see old problems in a new light and effectively persuade them to work even harder for the groups benefit. Transformational leadership has a bigger effect to the group at hand and requires the leader to be more active within the group (2015, p. 383). The full range of leadership model (figure 3) illustrates this comparison between the two approaches.

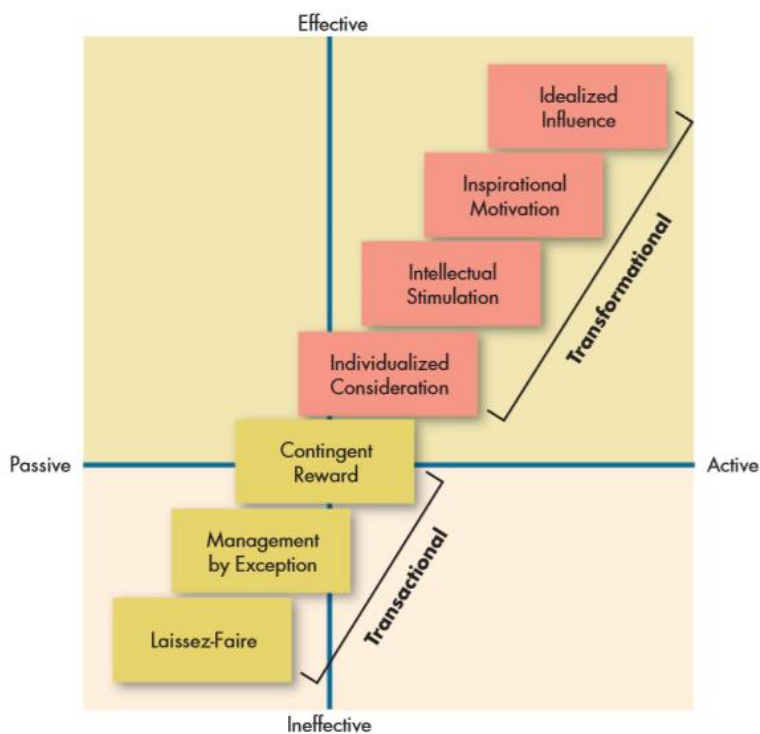


FIGURE 3: Full Range of Leadership Model (Robbins & Judge, 2015, p. 384)

The Laissez-Faire style of leadership refers to a style in which the leader evades getting involved in the project at hand and avoids making decisions (2015, pp. 382-383). Responsibilities of the leader are delegated to others when possible and the work is mostly done by the team itself. Management by exception means that the leader is only affecting the team when the work done by the followers do not meet the standards appointed by the manager. This style of leadership can be conducted passively or actively searching for these discrepancies (2015, pp. 382-383). Contingent reward leadership represents classic rewarding system for the work by the leader. These three approaches are all part of transactional leadership style.

Transformational leadership focuses more on the active participation of the leader on the project and the project team at hand (2015, p. 383). Individualized consideration includes coaching of each individual team member, intellectual stimulation is meant to empower the team members to solve problems intellectually, inspirational motivation aims to demonstrate the values and purposes of the leader to their follower so that the team is inspired by their contribution and finally idealized influence wants to convey a sense of mission, importance and pride to the followers to make them more integrated to the project (2015, pp. 383-385). However, these categorizations do not mean that a leader must be one or the other, as transactional attributes such as clearly defining group objectives have been studied to be key factors to success of IT-projects (Bonnie, 2015), but that the leaders' ability to motivate others and lead by example can be extra effective to the performance of the group.

The distinction between leadership and management is not clearly defined: in the transactional-transformational model of leadership many of the processes which could be defined as managerial are used to dictate the style of leadership a leader is conducting. A study (Terry, 1995, pp. 515-527) on the fundamentals of leadership argues that there shouldn't be a distinction between management and leadership, but that they should be studied in wider context. Without a clear division between the two, it is difficult to assess the full effects of leadership. Stone, Russell and Patterson (2004, pp. 349-361) conducted a study to differentiate between transformational and servant leadership theories. These theories diverge in the sense of focus: transformational leadership concentrates on the organization involved, in contrast to servant leadership which focuses directly on the followers of the leader (Russell, Stone, 2002, pp. 145-157). The study finds many common functional and accompanying attributes between the two theories and seven mutual key qualities of leadership can be determined from them:

- influence,
- vision,
- trust,
- respect or credibility,
- risk-sharing or delegation,
- integrity and

- modeling (Stone & co., 2004, pp. 353-354).

Influence in the context of leadership is a skill which makes the followers of the leader do as the leader wishes them to do. In the case of combined model of transformational and servant leadership theories, influence can be gained via authority and position in the organization but also by continued leader-follower relationship as well (Stone & co., 2004, p. 354). Vision refers to the ability to theorize the future states of the project and goals of the project. Trust represents the capacity to gain and show trust between the team and the leader, whereas respect and credibility help the leader to convey and substantiate their values, goals and ideas to the team efficiently. Risk-sharing and delegation are effective ways in empowering the followers. Integrity refers to the leaders ethical and moral conduct (Stone & co., 2004, p. 351). Modeling as a leadership quality is the ability to be a role model for the followers as a team worker and a leader.

For the purpose of this paper, leadership is evaluated from the point of these seven key qualities, as they take into consideration both the transformational leadership model and the lesser researched servant leadership theory. These theories are used to gain a more nuanced view of the effects of leadership.

3 THE EFFECTS OF LEADERSHIP ON IT-PROJECTS

Quantifying and verifying the full effects of leadership can be as hard as defining leadership itself. One of the most applied tools for evaluating leaders is the Multifactor Leadership Questionnaire (MLQ), which is used to rate leadership styles of an individual based on the transactional-transformational model of leadership (Bass & co, 1997). The questionnaire has several different versions, for the purposes of self-assessment and for subordinates to evaluate their leader.

The success of an IT-project is always in relation to the project itself. The PMBoK (2013, p. 35) states that “the success of the project should be measured in terms of completing the project within the constraints of scope, time, quality, resources and risk as approved between the project managers and senior management.” In other words, the success factors and criteria of a project must be determined by the project stakeholders for each individual project. The responsibility of ensuring the project success criteria are met belongs to the project manager. The importance of defining project success is apparent, as the feat of defining success for the project has been established to influence project success positively (Thomas & co., 2008, p. 740).

This chapter discusses the effects leadership has on IT-projects during different phases of a project and on the success of IT-projects based on literature and studies conducted on the subject. The papers are analyzed within the context of the seven key attributes of leadership.

3.1 The effects of leadership during different phases of IT-projects

As projects are conducted within project life cycles, different skills are needed from the project team and the project manager depending on the project phase. Skulmoski and Hartman (2010, pp. 61-80) examined the competencies of information systems project managers within the generic project phase structure.

The study finds significant differences in the perceived need of competencies. The effects of different factors influencing projects can also be examined from other angles. Somers and Nelson (2004, pp. 257-278) studied the key players and activities in each of the phases throughout enterprise resource planning (ERP) implementation projects, where ERP-implementations are complex IT-projects, which are conducted in several project phases. Pinto and Slevin (1988, pp. 67-75) on the other hand studied critical success factors for projects by identifying them and measuring their significance during project life cycles.

3.1.1 Initiating

The initiation phase entails the most teamwork related attributes from the project manager. Pinto and Slevin (1988, pp. 67-75) find that the clarity of goals and general directions is the most prevailing success factor throughout the project life cycle. This success factor can be induced by the project manager with their influence, vision and integrity competencies: as projects establish and maintain their project mission for the project, these leadership competencies help convey the message from the top management to the project team (Stone & co., 2004, pp. 351-354).

Skulmoski and Hartman (2010, p. 73) determined that effective questioning and generating feedback, persuasiveness, marketing and selling, listening skills, vision-orientation, articulating the business problem and consensus building were the most sought-after skills from project managers. These contain five of the seven key attributes of leadership: influence, vision, trust, respect and credibility and finally modeling. The other two, risk-sharing or delegation and integrity are not required yet, as the project team hasn't yet been introduced to their full roles until the planning phase of the project.

When discussing ERP-implementation projects, the importance of a project champion is predominant during the project life cycle. (Somers & co., 2004, p. 267). A project champion intends to use transformational leadership and other skills to market the project to the users successfully (2004, p. 259). The need of an outsider project champion indicates a necessity of the seven key attributes of leadership for complex projects, as the ability to convey vision and provide modeling for the new system is impossible without a strong influencer.

3.1.2 Planning

The planning phase consists of several managerial processes. This reflects in the Skulmoski and Hartman (2010, p. 73) study, where project management skills and knowledge stand out during this phase. Technical skills with theoretical knowledge are also among the most desirable competencies. However, leadership skills are also needed in the form of consensus building and decisiveness (2010, p. 66), which are part of the influence and credibility key qualities of

leadership. The study also finds that competencies such as objectivity and presentation skills are more important than in any other phase. This indicates to the need of coherency from the project team when project manager is planning the project in detail with their team. From the social aspect, the ability to get along with team members is also highlighted, continuing to the next phase as well. The already established project mission persists as one of the most important factors during the planning phase (1988, pp. 67-75), which requires the influence, vision and integrity competencies.

3.1.3 Executing

The execution phase is the most technical phase of the life cycle. The project team usually consists of several members, who are responsible of carrying out the implementation of the plans involving the project. Skulmoski and Hartman (2010, p. 73) study confirms this notion, as ability to get along and being a team player is the most important competency for project managers. Other attributes that are deemed important are results-orientation and truthfulness. These competencies feature the integrity, trust, delegation, respect and influence key qualities.

Müller and Turner (2007, pp. 21-32) conducted a qualitative study on project manager's style affecting different kinds of projects. The study found that competencies such as communication and integrity are vital for project managers, but that strategic input could be disadvantageous to the project's success and should be done by someone other than project manager. The study also suggests that the project manager should mostly emphasize on the success criteria given by the stakeholders and therefore the running of the project itself (2007, p. 31). This leads to higher involvement in the execution phase of the projects, which requires the most amount of resources.

3.1.4 Closing

The closing phase of a project indicates the need to review all the work done during the project. Skulmoski and Hartman (2010, p. 73) identified writing skills, sharing information and credit, pride in quality of work and honesty as the most valued competencies. From personal point of view, the ability to learn and self-evaluate truthfully are viewed as important for the project manager. These competencies reflect on the trust, respect, risk-sharing and integrity key qualities of leadership.

In the study about larger IT-projects (Somers & co., 2004, p. 267) researchers found out that the further the project is in its life cycle, the lower the number of different important factors there are for project management. The interdepartmental cooperation is one of the only factors which remains relevant from the initiation to the closing phases of the project. This means that the project

manager is required to be able to communicate with all the different departments that are affected by the ERP-implementation project.

3.2 The effects of leadership on the success of IT-projects

The linkage between leadership and project success has been vigorously studied over the years. According to Geoghegan and Dulewicz (2008, p. 66), leadership competencies of managing resources, empowering, developing and motivation are highly significant to success criteria being fulfilled. Critical analysis, influencing the project team, self-awareness and sensitivity are also measured to be substantial components to satisfying the success criteria. These competencies are firmly connected to the seven key abilities of leadership: influence in motivation and influencing, and delegation in empowering and developing. Critical analysis necessitates vision, credibility and integrity key qualities, while sensitivity encompasses respect, credibility and trust. Last of all, self-awareness entails modeling and trust capabilities from the leader.

In their study of technology-based project teams, Thamhain (2004, pp. 533-544) suggests that several key qualities of leadership are major factors to project performance; as the importance of team environment is assessed in the study, the support of team management is seen as the most important aspect of creating and maintaining a good project team environment. Satisfying the personal and professional needs of the project team members, constant project team development and effective project management by the managers are all essential to high performing project teams (Thamhain, 2004, p. 539). The study deduces the most significant drivers to project performance within project teams as personal interest in the project, pride and satisfaction with the work, professional work challenge and lastly accomplishments and recognition. In the framework of the key qualities of leadership, these drivers can be affected by the influence, vision, respect and delegation qualities of a leader. The study (2004, pp. 541-542) also recommends ten actions for effective team management, which entail the trust, integrity and modeling aspects of leadership.

Müller and Turner (2007, pp. 298-309) studied the influence of project managers on project success criteria. The study states, that having a certified project manager leading a project is not a guarantee for a successful project, but is necessary for a project's success (2007, p. 307). This indicates the need to educate project managers properly, as a certification without the competencies of a project manager leads to as poor project performance as with a manager without certification. The study also finds that project managers who are involved in the whole project life cycle are more successful in their job than those who are not responsible from the start of the project. This signifies the need to appoint the project manager as soon as possible, to ensure that the manager can perform efficiently according to their leadership and management competencies.

Mir and Pinnington (2014, pp. 202-217) researched the effectiveness of project management to project success. They evaluate project management on a model called the Project Management Performance Assessment (PMPA). The model consists of six parts: leadership, staff, policy and strategy, partnerships and resources, project life cycle management processes and project management key performance indicators. The study finds project management leadership to be a major factor for project success (2014, p. 212). This reflects from the fact that leadership has high impact on project teams (2014, p. 211).

Studies conducted on project management and its significance to projects almost unanimously point to the project manager being a major factor to successful projects. This still hasn't reflected positively on the rate of successful projects conducted (Bonnie, 2015). Project management frameworks are used to teach future project managers in managerial aspects of project management, but the teaching methods are still insufficient in creating the most efficient managers possible. Ramazani and Jergeas (2015, pp. 41-52) conducted a study on the education and training of project management and how it could be improved. The study finds three main factors to consider in developing project managers: critical thinking in the complex environment of projects, developing leadership factors of project management such as interpersonal skills and finally the preparation for the real-life project environment. However, these three factors are inadequate by themselves, as projects are multifaceted and depending on project can involve some abilities more than others (2015, p. 51).

4 CONCLUSION

IT-projects are complex entities, which require large amount of resources and knowledge to successfully operate. The basic project life cycle of initiation, planning, executing and closing necessitates changing abilities and attributes from the project team and the project manager. Leadership competencies can be studied from the organizational, individual or the servant point of view, which all have their similarities and dissimilarities. The seven parallel key qualities of leadership all have an effect in IT-projects, which means that these attributes should be studied in more depth, to define more optimal leadership styles. The effects of leadership on project success are apparent, but also difficult to define due to the nature of leadership, projects and project success itself.

The two research questions were: what is the significance of leadership for the success of IT-projects and is there a difference in effectiveness of leadership during different phases of IT-projects? These questions can be answered partially: the significance of leadership for the success of IT-projects is clear, as effective leadership with certified project managers leads to better overall performance and success of technology-based projects. The interpersonal skills and the ability to influence the project teams as project leader are key components to meeting the success criteria of projects. All these abilities are important, but due to complexities of projects they are not the only important factors in project management. This indicates to the need of more research on the field.

Difference in effectiveness of leadership during different phases is a harder problem to solve. Although all the seven key qualities of leadership have an effect on project performance during a project life cycle, they differ in importance and in which stage they are important in. One could argue that as the execution phase of project life cycle is usually the most resource-consuming phase, the then needed key abilities are more important than others and raise the importance of leadership during the phase. But as projects are individual by nature, this difference in importance cannot be concluded from this research alone. It is important however to investigate further on the impact of these seven key qualities of leadership as a factor in project performance and project success, to improve the education and research regarding leadership.

This literature review examined seven key qualities of leadership and perceived their effect on project performance and success. These key qualities can be determined as important, but they should be studied further individually, to gain the full picture of the model and its accuracy as an efficient model of leadership. In their current form these key competencies can mostly be evaluated by interpreting other studies from the point of view of these factors. As the terminology is not sufficiently constant, much of the analysis is left to the interpretation. This means that this model of seven key competencies also must be evaluated carefully for its merits and inadequacies, if it were to be used in further research.

The limitations of this paper are related to the vastness of the subjects in hand. The differentiation of leadership and management is not fully defined, which leads to very mixed definitions and research results. IT-projects themselves are a subject of high complexity, as there are numerous different frameworks used for project management. The need for leadership focused research in the world of IT became apparent during the research: there were very few if any relevant and adept research papers on the subject from Finland. If the country aims to educate as efficient project managers as possible for the sake of their economical stance in the world, there should be more research done in the field of IT and leadership.

SOURCES

- Bass, B. M. & Avolio, B. J. (1997). *Full range leadership development: Manual for the Multifactor Leadership Questionnaire*. Mind Garden
- Bonnie, E. (2015) Complete Collection of Project Management Statistics 2015. <https://www.wrike.com/blog/complete-collection-project-management-statistics-2015/>
- Geoghegan, L. & Dulewicz, V. (2008). Do project managers' leadership competencies contribute to project success? *Project Management Journal*, 39(4), 58-67.
- Fortune, J., White, D., Jugdev, K. & Walker, D. (2011). Looking again at current practice in project management. *Int J Managing Projects in Bus*, 4(4), 553-572. doi:10.1108/17538371111164010
- Mir, F. A. & Pinnington, A. H. (2014). Exploring the value of project management: Linking project management performance and project success. *International Journal of Project Management*, 32(2), 202-217.
- Müller, R. & Turner, J. R. (2007). Matching the project manager's leadership style to project type. *International Journal of Project Management*, 25(1), 21-32. doi:10.1016/j.ijproman.2006.04.003
- Müller, R. & Turner, R. (2007). The influence of project managers on project success criteria and project success by type of project. *European Management Journal*, 25(4), 298-309. doi:10.1016/j.emj.2007.06.003
- Pinto, J. K. & Slevin, D. P. (1988). Critical success factors across the project life cycle: Definitions and measurement techniques. *Project Management Journal*, 19(3), 67-75.
- PricewaterhouseCoopers (2012). Insights and Trends : Current Portfolio, Programme, and Project Management Practices. Retrived from <https://www.pwc.com.tr/en/publications/arastirmalar/pages/pwc-global-project-management-report-small.pdf>
- Project Management Institute (2013). A Guide to the Project Management Body of Knowledge
- Ramazani, J. & Jergeas, G. (2015). Project managers and the journey from good to great: The benefits of investment in project management training and education. *International Journal of Project Management*, 33(1), 41-52.
- Robbins, S. P. & Judge, T. (2015). *Organizational behavior*. Prentice Hall Upper Saddle River.
- Russell, R. F., & Stone, A. G. (2002). A review of servant leadership attributes: Developing a practical model. *Leadership & Organization Development Journal*, 23(3), 145-157. 10.1108/01437730210424 Retrieved from <https://www.emeraldinsight.com/doi/full/10.1108/01437730210424>
- Schwalbe, K. (2015). *Information technology project management* Cengage Learning.

- Skulmoski, G. J. & Hartman, F. T. (2010). Information systems project manager soft competencies: A project - phase investigation. *Project Management Journal*, 61-80.
- Sliger, M. (2011). Agile project management with scrum. Retrieved from <https://www.pmi.org/learning/library/agile-project-management-scrum-6269>
- SmartSheet (2016). Agile Methodology. Retrieved from <https://www.smartsheet.com/agile-vs-scrum-vs-waterfall-vs-kanban>
- Somers, T. M., & Nelson, K. G. (2004). A taxonomy of players and activities across the ERP project life cycle. *Information & Management*, 41(3), 257-278. 10.1016/S0378-7206(03)00023-5 Retrieved from <http://www.sciencedirect.com/science/article/pii/S0378720603000235>
- Stone, A. G., Russell, R. F., & Patterson, K. (2004). Transformational versus servant leadership: A difference in leader focus. *Leadership & Organization Development Journal*, 25(4), 349-361. 10.1108/01437730410538671 Retrieved from <https://www.emeraldinsight.com/doi/full/10.1108/01437730410538671>
- Terry, L. D. (1995). The leadership-management distinction: The domination and displacement of mechanistic and organismic theories. *The Leadership Quarterly*, 6(4), 515-527. 10.1016/1048-9843(95)90025-X Retrieved from <http://www.sciencedirect.com/science/article/pii/104898439590025X>
- Thite, M. (2000). Leadership styles in information technology projects. *International Journal of Project Management*, 18(4), 235-241.
- Thamhain, H. J. (2004). Linkages of project environment to performance: Lessons for team leadership. *International Journal of Project Management*, 22(7), 533-544. doi:10.1016/j.ijproman.2004.04.005
- Thomas, G. & Fernández, W. (2008). Success in IT projects: A matter of definition? *International Journal of Project Management*, 26(7), 733-742. doi:10.1016/j.ijproman.2008.06.003
- Turner, J. R. & Müller, R. (2005). The project manager's leadership style as a success factor on projects: A literature review. Project Management Institute.