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FACTORS AFFECTING THE SUCCESS AND

FAILURE OF PROJECTS

A literature review

Technology and Communications

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TIIVISTELMÄ

Projektit ovat nykypäivää. Projektinhallinnasta on tarjolla paljon tietoa ja osaavia projektityöntekijöitä löytyy, silti moni projekti epäonnistuu. Tämän työn tarkoituksena on tutustua teoreettisen viitekehyksen avulla siihen mitä asiakokonaisuuksia projektinhallinta sisältää sekä kirjallisuuskatsauksen avulla selvittää mitkä ovat ne seikat, jotka optimoivat projektin onnistumisen ja taas toisaalta mitkä ovat ne asiat, jotka edesauttavat projektin epäonnistumista.

Työn teoreettinen osuus etenee projektin käynnistämisestä läpivientiin sekä lopulta projektin päättämiseen. Työssä käydään läpi projektin läpivientiprosessi sekä prosessin eri osien tärkeimmät aspektit. Lisäksi teoreettisessa osuudessa kerrotaan projektinhallinnan kannalta kriittisimmistä kokonaisuuksista. Teoreettinen osuus päättyy yhteenvetoon eri tutkimuksista, joissa on käyty läpi projektin onnistumiseen ja epäonnistumiseen liittyviä tekijöitä.

Työn tutkimuksellinen osuus suoritettiin kirjallisuuskatsauksena. Aineisto käsitti yhteensä viisitoista artikkelia, tutkimusta ja raporttia. Kirjallisuuskatsauksen perusteella oleellisimmat projektin onnistumiseen liittyvät asiat olivat viestinnän onnistuminen projektissa, työtehtävien ja projektin etenemisen aktiivinen seuranta sekä selkeiden päämäärien olemassaolo. Myös asiakastyytyväisyys, osaava projektipäällikkö ja motivoitunut projektitiimi mainittiin osana projektin onnistumiseen vaikuttaneina tekijöinä. Projektin epäonnistumiseen oleellisesti vaikuttavina tekijöitä nousi analyysin perusteella huono viestintä, riskienhallinnan epäonnistuminen, huonosti toteutetut suunnitelmat tai suunnitelmien puuttuminen sekä projektin liian suuri laajuus.

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ABSTRACT

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Projects are today. Information on project management is available for everybody and competent project workers exist; still, many projects fail. The purpose of this thesis is to focus onto the elements of project management with the help of a theoretical reference framework and, to find out with the help of literature review what are the things that optimize the success of the project and on the other hand, what are the things that contribute to the failure of the project.

The theoretical part of the thesis progresses from the initiation of the project to the implementation and ending of the project. The thesis goes through the project implementation process and the most important aspects of the different parts of the process. In addition, the theoretical part tells about the most critical entities in terms of project management. The theoretical part ends with a summary of various studies that have examined the factors affecting the success and failure of the project.

The research part of the thesis was performed as a literature review. The material included a total of fifteen articles, studies and reports. Based on the literature review, the most essential things related to the success of the project were successful communication in the project, active monitoring of tasks and project progress, and the existence of clear goals. Customer satisfaction, a competent project manager and a motivated project team were also mentioned as factors influencing the success of the project. Based on the analysis, poor communication, failure of risk management, poorly implemented plans or the absence of plans, and the project's too large scope emerged as the factors that significantly affect the project's failure.

Keywords	Successful project, project failure, and implementation of a project

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1   INTRODUCTION

Projects are today. Regardless of the industry, projects are launched every day. Although project business is very common, many projects end in failure. What distinguishes the difference between these two outcomes? Have failed projects something in common? What makes a project successful?

According to Weinzimer (2022) only 58% of organizations fully understand the proper value of project management and 17% of IT projects fail so badly, they threaten the existence of the company. Weinzimer also states that the failure rate of projects with budgets over $1M is 50% higher that the failure rate of projects with budgets below $350,000. In one estimate, the failure rate of tech projects is over 70%.

The purpose of this thesis is to find out which are the most essential reasons for the project failure, and on the other hand, which aspects contribute to the success of the project. In addition, the aim is to discover if there are certain criteria that affect the outcome.

1.1   Problem Formation and Research Questions

Even though project work is of today and IT project activities are very common, more than 70% of projects fail (Weinzimer, 2022). The number of failed projects is very high, taking into account that the knowledge and know-how in project management exists. Therefore, the purpose of this thesis is to find out which things affect the success and failure of projects.

The goal of this thesis can be summarized to the following two research questions:

- What factors are typical of projects that fail?

• What are the key characteristics of successful projects?

The research questions will be answered through a literature review.

1.2   Research methodology

The central research method of this thesis is a literature review. In accordance with the principles of the method, the results of several previous studies are used as the material of the thesis.

A literature review is a research method that is used to bring together existing information and data related to a certain subject area. A literature review can be used as a method to search for an answer to a research problem. The purpose of the review is to build an overall picture of the matter under investigation. (Hirsjärvi, Remes & Sajavaara 2004, 112 ; Salminen 2011, 3.)

With the help of a literature review, the existing data is sorted and evaluated. The aim is to detect perspectives, contradictions, similarities and shortcomings from the data. A literature review can cover the joint processing of two studies, or it can mean a large body of research. Literature reviews can be methodologically divided into three main types; systematic literature review, semi-systematic literature review and integrative review. (Snyder 2019; Salminen 2011, 3.)

A systematic literature review is a summary of the essential contents of research in the selected subject area. Conducting a systematic literature review proceeds according to a clear structure and the method provides instructions for searching and analyzing information. The implementation of the literature review using a systematic method includes planning, preparing the literature review and reporting. The assessment of research quality is an important part of material selection. (Snyder 2019; Salminen 2011, 3.)

A semi-systematic literature review is an overview, the implementation of which is not limited by strict research rules. The research questions can be broad and

the materials used can be extensive. The semi-systematic literature review is methodologically the lightest of the literature reviews. It can be used to get a wide-ranging picture of the topic under discussion. Since the technique of the review is descriptive and semi-systematic, it must be noted that bias and suggestiveness can be observed in the selection of material. (Snyder 2019; Salminen 2011, 7-8.)

An integrative literature review falls between a systematic and a semi-systematic literature review. It is more critical than a semi-systematic review and its implementation proceeds step by step and systematically. An integrative literature review does not screen the material under study for the same purpose as a systematic literature review and thus gives the researcher more freedom. (Snyder 2019; Salminen 2011, 7-8.)

The literature review used in this thesis falls somewhere between semi-systematic and integrative literature review.

1.3   Structure of the thesis

The structure of this thesis is as follows: Chapter 2 focuses on different stages of project lifecycle. Chapter 3 includes the definition phase of the project. The different areas of project planning are examined in Chapter 4. In Chapter 5 the closing of the project is discussed. Chapter 6 deals with the factors which contribute to the success or failure of a project.

Chapter 7 is about the methods and materials used in the research. Chapter 8 reviews the research part of this thesis, i.e. the literature review and the results of the review. Finally, Chapter 9 contains the conclusion of the thesis.

2   PHASES OF THE PROJECT CYCLE

Artto, Martinsuo and Kujala (2011, 37) have defined the life cycle of a project as follows: "Project lifecycle refers to the chain of phases in which the ideas, expectations, and opportunities for a project are identified; the project is executed; and the benefits resulting from the use of the project product are gained and product use is supported. "

Projects have a clear beginning and an end. However, in terms of success in project business, the stages before and after the project must also be considered as well as the interdependencies of different projects (Figure 1).

Project life cycle

Project execution

| Ideation and preparation Marketing and sales | Project start | Plannig | Implementation / Control | Closing the project | Product in use / Customer support |

Figure 1. Project life cycle (Artto et al. 2008, 47).

According to Artto et al. (2008, 101), a project can be considered to start from the moment when the customer or project supplier has identified the project opportunity and begins to define an actual project. In the initiation and definition phase, the goal is to identify the need for the project and define the project's goals. The purpose of the planning phase is to identify the tasks of the project and the necessary resources for the implementation of the project.

In the implementation phase, the mutual responsibilities and operating methods of the project group are specified. The contents of the project and resourcing of the tasks are defined in the work breakdown. In the control phase, the progress of the project is monitored by for example, cost and schedule reporting. The aim of the continuous control is to detect deviations in relation to the goals and to the plans. (Artto et al. 2008, 47-48.)

The project is usually considered finished when the product or services implemented in it have been delivered and put into use and the customer has accepted the delivery (Artto et al. 2008, 48).

3   PROJECT START – DEFINITION PHASE

The third chapter deals with starting the project and aspects related to starting the project such as project agreement, project planning and formation of the project organization.

3.1   Project Agreement

Before the start of the project, there is a discussion between the customer and the project supplier about the price of the project and other project-related issues. Once an agreement has been reached on these issues, the drafting of the contract itself will begin. The project contract defines the starting points for the project for implementation. (Artto et al. 2008, 75.)

The contract must contain specifics about the issues critical to the success of the project, specify the issues specified in the offer, and define project responsibilities and obligations as well as sanctions and possible rewards. The agreement must also contain clear conditions and operating methods for risk management, changes and problems. It is also essential to document other important matters to the project parties. (Artto et al. 2008, 75 ; Turkulainen 2012.)

The project delivery unit is responsible for implementing the project as it is agreed with the customer and defined in the contract. The project delivery unit is also responsible for more detailed planning, project implementation, and finally the actual project delivery to the customer. (Artto et al. 2008, 75 ; Turkulainen 2012.)

The main purpose of the contract is to define obligations between all suppliers involved in the project. This is particularly important in large complex multi-supplier projects. A carefully prepared contract clarifies the objectives of the suppliers involved in the project and gives them the opportunity to work effectively towards a common goal. In addition, a detailed contract reduces the number of complaints and other claims during the project. The project acceptance criteria

should be documented clearly and in detail in order to prevent misunderstandings. The contract consists of three parts: the contract type, project details and alignment of goals. (Matinheikki 2020; Martyr 2018.)

Jorgensen, Mohagheghi and Grimstad (2017) mention in their article that it is difficult to draw general conclusions about the impact of different contract choices on the results of projects, but based on the research, a few conclusions and recommendations can be made. According to the article, they believe that evidence from various studies supports the conclusion that projects that use contracts based on FP pricing (flat price) seem to be less problematic compared to projects using T&M-based (time & materials) contracts. It is concluded that choosing T&M contract type is more recommended, due to the fact that the FP contract use increases the risks of projects. The possibility of risks increases because there is too much focus on a lower price during the conclusion of the contract. As a result, the project has a higher risk of failing because the service provider's cost estimate may be too optimistic. (Jorgensen et al 2017.)

3.2   Project Initiation and Definition

The next part of the project life cycle is project initiation and definition. It is important to execute this stage by focusing on the essential details of the actual goals of the project. According to Rissanen (2002, 22), the project initiation and definition stage contains the biggest risks for the project which is why it should not be carried out hastily. Typically, dissatisfaction about the project carried out, is due to deficiencies at the start of the project and neglect of project work methods. (Rissanen 2002, 22.)

A comprehensive specification and contract for the actual implementation of the project should be the product of the project initiation and definition stage. If the specification and definitions of the content of the project is done too vaguely,

the risk of the expansion of the content during the project increases. (Pelin 2011, 198.)

The initiation and definition phase of the project is particularly significant when thinking of the project as a whole; important decisions about the project's goal, objectives and implementation method are made in this stage. The purpose of the definition is to describe what is done with the system or product or what is used for. The end product of the definition stage should be a description about the functional design of the system. The success of the definition requires good cooperation between the project team and the end users using the system. (Rissanen 2002, 176; Ruuska 2012, 39.)

The customer can transfer responsibility for managing the entire project to the project supplier partly already in the early stages of the project. This may happen even when the realization of the project is not yet complete certainty. The project supplier must provide content and project management expertise to the sales phase, even if it never gets the project to implement. On the other hand, from the point of view of the project supplier, this investment is profitable; the project goals and implementation solutions can be influenced during the specification and bidding process and simultaneously ensure that the solutions recommended by sales to the customer are feasible. (Artto et al. 2008, 102.)

3.3   Project Planning

According to Allen, McLees, Richardson and Waterford (2015), planning is one of the most critical phases of a project and it defines the success of the final project. Understanding the scope of the project is essensial. Different uncertainty factors can be reduced or totally eliminated with good planning. In addition, the operation of the project becomes more efficient, the understanding of the goals is enhanced and a good basis for work monitoring and guidance is enabled. (Allen et al 2015.)

The project plan is considered to be a central instrument of project management. The project plan describes the project content, goals, work, operating methods and management principles. The project plan also enables the work and project management parts to remain as a balanced whole with the correct content. The prerequisites of project success are rooted in the project plan and its preparation. (Artto et al. 2008, 05; Ruuska 2012, 50.)

Typical mistakes made in the project planning are, for example, making too optimistic workload estimates and schedules, tightening schedules without a proper reason, underestimating or forgetting project dependencies, overestimating the availability of resources as well as overestimating resource competences when estimating workloads and underestimating. (Artto et al. 2008, 05; Ruuska 2012, 50.)

The quality of project planning is largely connected to the overall success of the project. A comprehensive and well-prepared project plan enables the achievement of the project goals and project management suitable for the project. It is noted, that project aims and goals should be documented in the project plan as precisely as possible. The means of reaching the goals, work tasks related to the above and resources needed to achieve the goals should all be written down with detail. Several studies have shown that proper project planning shortens the project implementation time several tens of percent. (Mäntyneva 2016, 44; Pelin 2011, 80)

If the project planning stage has been poorly and ineffectively executed, it will have different kinds of implications for the implementation of the project. One result of bad project planning is, for example, lack of awareness and lack of understanding of the project goals and the various means of how the goals are to be achieved. It can also have an impact on the efficient execution of work and resourcing. (Mäntyneva 2016, 45; Rissanen 2002, 176.)

According to Ruuska (2012, 285), it must be remembered that every project is different and unique. Thus, when preparing the content of the project plan, rele-

vant issues concerning the project in question must be considered on a case-by-case basis. (Ruuska 2012, 285.)

3.4   Formation of the Project Organization

The people working in the project form a project group. The project group is committed to the project goals and the members of the group support each other during the project in project-related tasks in order to achieve the output related to the project. The members of the project team must be committed to the project and stay motivated to achieving the project goals. The commitment can be manifested as a positive influence towards achieving of the project goals. (Huuhka 2010, 110-112; Mäntyneva 2016, 26-34.)

One of the project manager's tasks is to communicate clearly to the individuals of the project team about their roles in the project and what is expected of them and their work input. The project manager's responsibility is to solve problems related to the work of the project team, to support the work and gives regular feedback to project team members about their work. (Huuhka 2010, 110-112; Mäntyneva 2016, 26-34.)

According to Huuhka, it is vital to understand the culture of the company's organization when setting up a project team. The culture of the company can consist how people perform and relate to the organization. Organizational culture consists of assumptions, beliefs, values, norms as well as the way of communicating what the organization represents to employees and other stakeholders. The project manager has the opportunity to change the culture of the organization to suit the project, but the project culture must be consistent with the organization culture. This is an important part of the project team's internal development and cooperation which can be respectively used to ensure the success of the project. (Huuhka 2010, 111; Suda 2007.)

When choosing group members, it is necessary to emphasize their competence. The members of the project team are responsible for achieving the project's goals in their own special area. In addition to competence, co-operation skills of team members are a very important feature from the point of view of project success. (Mäntyneva 2016, 28.)

3.5   Definition of Division of Responsibilities

The work tasks and mutual division of labor of the entities participating in the project must be documented in the starting phase of the project. This is necessary especially when the project cross the boundaries of organizations and internal functions of the organization. The documentation is to clarify responsibilities of different employees. (Mäntyneva 2016, 30-32.)

One way of documenting different responsibilities is the responsibility matrix (RACI) shown in Table 1. In the RACI matrix, responsibilities are divided into four different categories, which are Responsible, Accountable, Consulted and Informed. It is useful for the project manager to include members of the project team in preparing the matrix as this can be a way of helping the team members committing to the project. (Mäntyneva 2016, 30-32.)

Table 1. RACI matrix related to project tasks (Mäntyneva 2016, 31).

Project Task	Person 1	Person 2	Person 3	Person 4
Task 1	Responsible	Accountable	Consulted	Informed
Task 2	Accountable	Consulted	Informed	Responsible
Task 3	Consulted	Informed	Responsible	Accountable
Task 4	Accountable	Consulted	Informed	Responsible

Especially in larger projects, the boundaries and definition of the division of responsibilities are a prerequisite for resource planning. The responsibilities and tasks in question must be documented and brought also to the awareness of different stakeholders. (Mäntyneva 2016, 30-32.)

4   PLANNING PHASE – PROJECT MANAGEMENT

This chapter examines project planning and project management. The chapter discusses, among other things, the management of the schedule, resources, costs and risks. At the end of the chapter, the importance of communication in projects is discussed.

4.1   Schedule Management

Artto et al. (2011) emphasize that staying on schedule is the most critical terms of success and in order to keep the work on schedule, the more detailed the schedule planning must be. According to Ruuska (2018, 122), the schedule planning should be drawn together with different entities participating in the project since the scheduled actions require different resources to be used in a certain time. It is also advisable to include an experienced project team since they are able to take into account the details related to the project and make a more accurate project schedule than the project manager alone. (Artto et al. 2011; Mäntyneva 2016, 151; Ruuska 2018, 122.)

As the project progresses, it becomes increasingly difficult to positively influence its duration. Therefore, the implementation time of the project must be planned carefully and well before hand. Commitments to keep the schedule must be made in the planning phase of the project. (Ruuska 2018, 122.)

Typical signs of poorly documented schedule are, for example, too rough task breakdowns and tasks missing from the schedule. In order to have the necessary resources available when needed, it is recommended to connect project schedule management and resource management to each other (Ruuska 2018, 51).

The first version of the scheduling plan is usually rough estimates which are specified as the designing and planning progresses. When the project moves on the to implementation stage, the schedule plan may still undergo changes. For this reason, the project schedule must have some leeway so that possible unex-

pected situations can be handled with without delaying the overall schedule of the project. (Artto et al. 2008, 127; Mäntyneva 2016, 151.)

According to Ruuska (2012, 51) it is important to continuously monitor progress of the project and the schedule since changes in the defined schedule can happen slowly and go unnoticed at first. Reasons for this can be, for example, additional tasks to the project, delay in another related project or changes of key resources. Corrections in the schedule should be done shortly as well as check the effects on the schedule goal. Significant deviations may require a redesign of the schedule, because the tasks defined in the project breakdown are usually dependent on each other. (Artto et al. 2008, 122; Mäntyneva 2016, 153; Ruuska 2012, 51.)

Changes in the schedule may also contribute to financial problems of the project. Exceeding thescheduled time often leads to exceeding the project budget, for example, in a situation where work overtime or increase of human resources is needed. (Artto et al. 2008, 122 and Mäntyneva 2016, 153.)

4.2   Subdivision of the Project

A schedule plan includes the overall schedule of the project, in other words, it covers the project from start to finish. By dividing the schedule into smaller sections, the execution and monitoring of the project becomes easier. This method also enables identifying significant milestones of the project. (Artto et al. 2008, 125.)

Milestones and intermediate goals should be clearly defined in the project plan. Milestones and goals are used to evaluate and monitoringing the implementation in relation to the plans. Setting intermediate goals also contributes to the project team's work since reaching a defined goal can increase the efficiency of

work as well as improve motivation in the work group. (Artto et al. 2008, 125; Ruuska 2012, 53.)

The mistakes and successes made in the division of work are reflected everywhere in the project and therefore it is important that not only the project manager but also the members of the project team participate in the division. This approach ensures that the members of the project group commit to the project already in its early stages and allows the team members to know what kind of future tasks of the project are their responsibility. In addition, the risk of not forgetting important aspects is minimized. (Artto et al. 2008, 113-118;Mäntyneva 2016, 61-63.)

4.3   Resource Management

In order for the project to be functional and in operation, the requirements, schedule and available resources have to be congruent with each other. Project resourcing and resource availability is a key issue in resource planning. The main task of resource management is to ensure the availability and sufficiency of the resources needed by the project. Resources can be people, machines, equipment, materials, supplies, capital or offices. In managing human resources, the goal is to assign the right, competent people to the right tasks and make them available to do the tasks suitable tools in a timely manner. Resources management must also take other simultaneous projects into account, especially if same people are working in several projects. The prioritization of projects and avoiding simultaneity of similar work tasks is a useful method in avoiding problems in resource management. (Artto et al. 2008, 142; Mäntyneva 2016, 55-57, 150; Ruuska 2012, 48.)

The important task of the project manager is the management the project resources in order to keep the project on schedule, on budget and in addition to ensure that the project meets the quality of the objectives. If the whole project schedule or subdivision of the project schedule prolongs and goes into overtime,

the reason is typically wrongly designed or calculated resources. To avoid this from happening, a separate resource plan can be attached to the project plan. The resource plan describes what kind of resources are needed for each individual task at any given time, and designates the person responsible for the task. (Mäntyneva 2016, 55-57.)

The project manager or the project management team does not necessarily have a direct option of choosing resources due to, for example, collective agreements, the use of subcontractors, internal or external reporting relations. For this reason, the project manager or the project management team should actively negotiate with those parties who are able to offer the resources needed for the project. (Artto et al. 2008, 145)

Resourcing challenges can affect the project schedule, budget, customer satisfaction, quality and risks. Missing or inappropriate resources for the required roles reduce the probability of success and in the worst case can lead to the cancelation of the project. If resources are not available, for example, because the considered resource are reserved in other projects, the project manager or project team may have to acquire substitute resources. These substitute resources may not have the same expertise-level or the cost level of resources is higher than was originally planned. The use of substitute resources is allowed, if for example, legal criteria or alike have not been violated. The disadvantage is a decrease in efficiency since new resources require time to be familiar with the project's content. This effect is known as a decreasing marginal benefit; because of the new employee, the work input of two people equals the work input of one person and thus, the benefit is little and time consuming. (Artto et al. 2008, 145; PMBOK 2017, 330; Ruuska 2012, 49.)

These above-mentioned factors should be considered in the planning phase of the project. The project manager or the project management team must document the possible effects of missing necessary resources on the project schedule, project budget, project risks, project quality and other project management plans. (PMBOK 2017, 330.)

It is also worth noting that an excessive amount of resources can also be problematic if the use of resources is not optimized according to the workload. This type of situation generates expenses but no important work-input for the project. The project manager must react immediately when possible problems in the resource management rises. (Mäntyneva 2016, 55-57.)

Some of the project resources, such as, external services, human resources, materials, raw materials, machines and equipment can be acquired from outside the project or the organization. These acquisitions can be a large part of the project total costs, and their management is of great importance in achieving the project financial goals. Therefore, it is important to define what will be procured from outside, how much will be procured and how the implementation and timing of the procurement will be coordinated. (Mäntyneva 2016, 58.)

In terms of the success of the project, it is essential that the realizations of the schedule and the use of resources are monitored at the most detailed level possible. With the help of monitoring data, conclusions can be made about whether the realized schedule corresponds to the original plans and whether it meets the schedule goal. Tracking predetermined information enables monitoring of, for example, if the project has stayed within the intended schedule and if the tasks have been completed on time or if the completion of the tasks is behind schedule. (Artto et al. 2008, 147-148.)

4.4   Cost Management

The accuracy of the cost estimate is affected by how accurately the scope of the project and the associated risks have been defined. At the beginning of the project an assessment of the costs is made on a rather rough level since the project's goals and tasks and the related workloads have not yet been more specifically defined. The total cost estimate is refined as the project progresses. The accuracy of the cost estimate is typically about +/- 20% in the start of the

project, after the planning phase +/- 10% and during the implementation phase +/- 5%. (Artto 2008, 162; Mäntyneva 2016, 78.)

A large part of the total costs of the project is determined based on the decisions made in the initial stages of the project. The scope of the project, resourcing and schedule-related decisions define the cost structure and budget of the entire project. These costs will only be realized later in the course of the project. The possibilities of influencing the project costs significantly weaken at the beginning of the implementation stage, because the investment decision of the project commits to pre-prepared solutions and boundary conditions. The cost of the change become more expensive the later the change is made. This is due to the affects the change has on many different tasks. At worst, the change can affect already signed purchase agreements or work that has already been done. (Artto et al. 2008, 151-152.)

According to Mäntyneva (2016, 80) it is recommended to ask for an expert opinion about the amount of project-related costs, to be prepared for unexpected events, to consider project management costs as part of the total project costs and to utilize the experience of previous similar projects in estimating the actual project costs. However, Ruuska (2012, 62) emphasizes that the rationing of the costs to the benefits achieved by the project is more important than minimizing the costs altogether.

An important part of the cost estimate is the estimate reserve, which tells how likely the cost estimate covers the actual costs. The estimate reservation is a preparation for possible unfavorable events which if realized, would increase the costs of the project. This reservation gives the project manager a margin, because it can cover possible small budgets overruns. (Artto et al. 2008, 151-152; Mäntyneva 2016, 80 .)

4.5 Risk Management

Risk management is a continuous process through all phases of the life cycle of the project. Preparation for the possible risks in advance is crucial and involving project stakeholders in the definition of risks is essential. (Projektiyhdistys 2012, 14.) Projects risk are often related to the following things; schedules, unclear roles and responsibilities of project team, funding, availability and workload of key resources, commitment of project organization members to the project, internalizing and understanding of the needs of the project client, quality and contracts. (Mäntyneva 2016, 131, 133–135.)

The risk strategy of the project must be defined at the beginning of the project. The risk strategy describes, for example, how risks are approached, when it is worth taking a risk and what is the measure to reduce the risk. A carefully documented risk strategy guides decision-making and guides the decision-maker on how to approach certain risks. Neglecting a risk strategy can lead to unfavorable business decisions and unprofitability of the project. The risk action plan made at the beginning of the project must be monitored and updated during the project. Updating is required when new risks appear or if changes of already recorded risk if identified. (Artto et al. 2008, 217-218; Projektiyhdistys 2012, 14.)

Risks can be managed and combated in many different ways, such as avoiding the risk or reducing its probability. One possibility is to transfer the risk to another party, such as a customer or a subcontractor. In addition, the alternative is to accept the risk without prior measures, prepare for the realization of the risk with an action plan, or change the risky part of the project plan. (Artto et al. 2008, 218-219 and Pelin 2011, 224.)

4.6 Quality management

Project quality management includes all phases of the project, starting from definition, project team management, project processes, results and closing of the

project. The project quality management ensures long-term business success through customer satisfaction. The starting points for the quality of the project are quality management practices which contribute to supporting project processes and results. The risk of neglecting quality management is not achieving the project goals. (Projektiyhdistys 2012, 16.)

In project delivery, quality is comparable to how well the customer's expectations and requirements are met. The entire project team and quality management are responsible for the quality of the project, a fact that should be part of the project team's daily work. Quality planning is usually done at the same time as planning the scope of the project. It is important to note that quality is achieved by planning and implementing in advance, not by doing tasks afterwards with inspections. Quality planning cannot be copied from previous projects since every project is different. When documenting the quality plan the possibilities of that project special needs must be considered. (Artto et al. 2008, 224.)

Identifying and correcting defects before handing over the work to the customer is an essential and important part of the quality control process. If the end-product is delivered to the customer with faults and defects, the cost of repairment is much greater than repairing the defect in earlier stages of project. This scenario also includes a risk of losing reputation and it might also have a negative impact on the future projects of the company delivering the projects. (Artto et al. 2008, 230-231; PMBOK 2017, 274.)

The monitoring quality process involves costs, which are mainly evaluation costs and internal failure costs. Quality can also be improved by including quality control in the project planning phase and by creating a culture of quality for the entire project organization. (Artto et al. 2008, 230-231; PMBOK 2017, 274.)

The qualitative success of the project can be assessed by looking at the quality criteria defined in the project plan and making sure if the defined things are met.

Without documented goals or criteria, it is difficult to determine whether the quality is on the level it is supposed to be. (Ruuska 2012, 277.)

The project in the initial phase, the project team and the customer must reach an agreement on the content and characteristics of the final result of the project. A common vision is needed throughout the project life cycle. Consensus on the substantive quality of the project is necessary since it can be used as a basis for delimitation project tasks, details on resource and cost estimates, and schedule fixes. (Ruuska 2012, 277.)

4.7 Scope Control

The scope of the project defines the boundaries for the project. If the project boundaries are not defined sufficiently and if later additions and deletions to the project are not properly documented, the risk of the project getting out of control increases considerably. From the point of view of project stakeholders, the scope and the results represent the overall scope of the project and the project must deliver all that is described in its scope. (Projektiyhdistys 2012, 23.)

Mirza, Pourzolfaghar and Shahnazari (2013) emphasize in their article that knowing the needs of the customer and users is critical to the project for success. In terms of the project success, it is vital that key stakeholders are identified and included in defining the scope of the project. Involving stakeholders already in the early stages of the project enables the stakeholders to contribute to the project outputs as well as gain a common understanding of the project's central goals and especially the constraints. (Mirza, Pourzolfaghar, Shahnazari 2013; Mäntyneva 2016, 125, 129.)

The scope of the project is one of the components of the project goals. The scope of the project means the product produced as a result of the project. The scope of the project includes the specification of the requirements, features,

functionalities and performance of the project and is directly related to the bene-fit that the project is aiming for. (Artto et al. 2008, 110.)

Project scope management is a key part of the project's success. The goal of the scope management is to ensure that the output of the project meets the require-ments set for the project and that the project is implemented efficiently. Making changes to project scope must be controlled and larger changes usually require an approval procedure. However, the constant need for changes and scope revi-sions is a sign of poor design of the project. In the case of a larger set of changes, it can also be decided to transfer the changes to the next project.This way the change has no effect on the schedule or costs of the project in question. (Artto et al. 2008, 110-111; Mäntyneva 2016, 150; Pelin 2011, 206; Ruuska 2012, 43.)

PMBOK (2017) recommends implementing an integrated change management process, which includes a separate group responsible for change management also known as CCB (Change Control Board). The CCB is the formally authorized group responsible for checking, evaluating, accepting, postponing or rejecting changes. Approved change requests may require, for example, new or revised cost estimates, schedule dates, resource requirements and/or risk analysis. These changes may require updating the project management plan and other project documents. In some change requests a separate approval of the client or sponsor may still be required, unless they are part of the CCB. (PMBOK 2017.)

Needs for change should be approached more thoughtfully the further the pro-ject has progressed since a change might have an impact on other parts of the fi-nal product. The change causes changes extra planning, additional testing and an increase in the use of worktime and thus additional costs. However, if changes are made in the middle of the project, the schedule change and cost impact caused by the change and the benefits to be achieved must be clearly communic-ated to all project parties. (Ruuska 2012, 43.)

The scope should be documented with great detail in order to avoid misunder-standings. The views and wishes of the various stakeholders of the project in terms of the project scope and coverage may differ from each other. It is also vital to understand that stakeholders may not have the same level of technical knowledge as the product provider. For this reason, the scope should be documented clearly and it is also recommended to ensure that there is nothing in the content that is unclear to stakeholders. (Mäntyneva 2016, 47; Pine 2016, 47; Ruuska 2010, 40.)

Key problems in the scope management include, among other things, the project involving the customer or target group at too late a stage, doing unnecessary additional work or over-quality, problems in project change management and underestimating the complexity of the project. (Artto et al. 2008, 120; Mäntyneva 2016, 46.)

In their article, Mirza et al. (2013) refer to studies where it has been found that the majority of the projects fail because clear goals have not been defined for the projects and the implementation of the goals has not been controlled. According to Mirza et al. (2013) the changes in scope must be limited or atleast controlled, as changes have the potential to destroy the whole project.

4.8 Project Management

The project management can be defined as a combination of project management methods aimed at achieving the set goals and objectives. Management styles include knowledge, skills, methods and different tools needed to achieve the project goals and objectives. Management methods and their emphasis may vary according to the different phases of the project. The tasks of project management main to ensure the success of the project implementation and the achievement of the defined goals. A project at its simplest must be managed in such a way that goals are achieved, the budget is not exceeded and the schedule is not exceeded. (Artto et al. 2008, 35; Pelin 2009, 303.)

In large complex projects, effective project management gives the parties involved an opportunity to focus on what is essential. An effective project management also makes it possible to respond quickly for any unexpected events or challenges. (Aalto University 2013, 5.)

According to Ruuska (2012, 50), project problems are rarely related to technology, tools or the content of the final product. The real reason is usually the inadequacy of project management and methods. Ruuska emphasizes that effective project management is based on proactive and careful project planning.

Project failure is most often due to insufficient of project management. Applying systematic and uniform methods and tools helps to perform proper project management. One way to implement a consistent way of working is to use written instructions, such as a project manual. However, it must be remembered that different methods and tools do not replace the project team's expertise and ability to solve problems which is why the project should not use methods and tools that are unreasonable to learn and manage relative to the size of the project. (Ruuska 2012, 50; Mäntyneva 2016, 153.)

Weak project management or its absence typically leads to schedule delays and cost overruns, poor quality, uncontrollable expansion of project scope and stakeholder dissatisfaction. This may lead to the project failing in achieving the defined goals. (PMBOK 2017, 10.)

4.9   Management of Project Communication

The importance of communication and information flow in successful project management is very high. With the help of properly executed communication, information can be transferred reliably and correctly between different parties of the project. A communication plan of the project can be written down already in the early stages of the project and include it in the project plan. In the initial phase of the project, communication is largely focused on clarifying the project

goals, responsibilities, organization, project plan and project management prac-
tices. (Artto et al. 2008, 236; Pelin 2011, 286-287.)

Communication usually stands out most prominently when it is incomplete and
incorrect. In communication, as well as in quality management, foresight and
planning are recommended. (Artto et al. 2008, 232; Pelin 2011, 286.)

The successful launch of the project is of great importance to its successful im-
plementation. Successful communication ensures that people participating in the
project understand the project as a whole and their own role in the project. After
the project has started, project meetings are a very important part of project
communication and the source of internal information for the project team. Be-
sides information sharing, the internal communication has a very special mean-
ing in creating a good working atmosphere. A good atmosphere affects people's
motivation and general attitudes, which in turn are reflected in their work. Well-
managed communication therefore directly affects the success of the project.
(Kauhanen 2012, 174; Mäntyneva 2016, 87-88.)

A prerequisite for a successful project is agreeing on common rules of the
project. The project manager should draw up rules and guidelines together with
the project team, thus preventing the emergence of unnecessary rules that are
not useful in project work. The nature of the project determines how strict the
rules should be. For example, expensive and critical projects require fairly precise
and strict rules. It is good to agree in advance, for example, on the division of
work, responsibilities and cooperation. (Projektiyhdistys 2012, 27.)

5 CLOSING OF THE PROJECT

In the project implementation phase, the project is executed according to the project plan. The project manager is responsible for monitoring the progress of the project and supervising the use of resources. At this stage, the most important thing is to recognize the progress as well as risk factors that may complicate the success of the project. If these kinds of factors are recognized, corrective measures must take place immediately. (Mäntyneva 2016, 19.)

The final stage of the project is reached when the project goal is met and end-product is ready. The project manager prepares the final report which inccludes a summary of the project and   possible deviations in relation to the project plan. The final report and the reflections in it help to learn about the progress and execution of the project. The lessons can help in future projects. (Mäntyneva 2016, 19-20.)

In connection with the termination of the project, the project organization and the resources are released, the project activities are stopped and the project is handed over to the client. According to Martyr (2018), clients should be extra careful when accepting the project and paying the final invoice before all open issues have been resolved. In addition to these actions, the documentation is finalized and archived. (Martyr 2018; Mäntyneva 2016, 19-20.)

6 SUCCESS AND FAILURE FACTORS OF THE PROJECT

According to a study by Shaul and Tauber (2013), 90% of all large ERP projects are delivered behind schedule or over budget, 67% of projects fail to meet their goals and more than 40 % of all major IT projects fail.   Budzier and Flyvbjerg (2015), on the other hand, write in their article that five out of ten technology projects do not meet their cost goals.

Innovative project management tools make it possible to model complex projects and understand complex dependencies, but it does not improve project performance, nor does it enable accurate project predictability and accuracy of results.

According to the article written by Alami (2016, 62-63), 25% of IT projects fail, 50% of projects require redoing some of the work, and 20–25% of projects do not offer a return on invested capital. Project management has been documented as a major cause of IT project failure. The article refers to a Gartner study conducted in 2012, which shows that the risk of IT projects increases with the size of the project. In other words, smaller projects are less prone to failure than large ones. (Alami 2016, 62 – 63.)

A quarter of failed IT projects with a budget of more than $350,000 suffered from uncontrollably growing and unpredictable budget costs. The criterion for success was an IT project that had been successfully completed with costs that corresponded to the assigned budget, within the agreed deadline and by fully delivering the functions defined in the project's objectives. The conclusion of Gartner's report was that only 16.2% of projects met these requirements and partially failed projects accounted for 52% of the researchable projects, while 31% were complete failures. (Alami 2016, 62 – 63.)

Hiljanen (2020) has listed in his white paper the different stages of the project and the stages of the project each success and failure factor should be evaluated in. It is important to note that assesment is not a one-time task, but assessment is needed at every stage of the project where the factor in question is relevant.

Table 2 describes some of the most critical success and failure factors and shown the stages the factors should be evaluated. Critical success factors are those components that are essential to deliver the project and can be described, for example, as sets of tasks, that contribute to the outcome or achievement of success criteria. As shown, constant observation and evaluation affects most of the factors. It is essential to understand that the evaluation must not be emphasized only on certain parts of the project, but that the process must be continuous throughout the project. (Gomes et al. 2016, 491; Hiljanen 2020.)

Table 2. The evaluation of critical success and failure factors in different stages in project (Hiljanen 2020).

		Initiation	Project planning	Execution	Stabili- zation	Project closing	Business as usual
Critical success factors	1. Top management suppor	x	x	x	x	x	x
	2.Project team competence		x	x	x		
	3.Cooperation and open communication across organization	x	x	x	x	x	x
	4.Clear goals and objectives	x	x	x	x	x	x
	5.Effective project management		x	x	x		
Critical failure factors	1.System misfit	x	x	x	x	x	x
	2.High turnover of team members		x	x	x		
	3. Over-reliance on heavy customization		x	x	x		
	4.Poor consultant effectiveness		x	x	x		
	5.Poor IT infrastructure		x	x	x	x	x

Planning the project goals, scope, schedule, resources and costs, as well as risk and quality management, are not separate areas, but they all tie together. When these areas are carefully planned at the beginning of the project, the project there are clearly better conditions to reach the schedule and financial goal without forgetting the scope. (Artto et al. 2008, 101.)

Defining and evaluating project success is not an unambiguous process due toe fact that projects can have several different goals. These goals can be, for example, content, quality, implementation, financial or time related. The order of importance of the above, among other things, on whose stakeholder's opinion is considered. According to Ruuska (2010, 274-275), it can be generalized that the project is successful if the goals set for the end result of the project are achieved in accordance with the planned schedule and agreed costs.

Success can be evaluated in relation to the project plan. If the project goals or expectations are not met, the project plan may have been poorly or unrealistically made. Ruuska (2010) points out, that it should be noted that not even a good project plan will save the project if there are problems in organizing and managing the project.

An alternative way to classify project success criteria is to distinguish between hard and soft criteria. Hard criteria are objective and can be measured easily. The hard success criteria of the project include time, budget and performance metrics as well as financial success and quality. The soft criteria ones take into account different human factors thus making soft criteria quite difficult to measure. Every criterion, hard or soft, should be defined in detail and assigned different weightings for evaluating the success of the project. (Albert, Spang & Balve 2018.)

Gomes & Romao (2016, 491) mention in their article that the project success is experienced and viewed differently by different stakeholders. Projects are carried out in different contexts and environments, and they naturally have different critical success factors that must be taken into account. The definition of project success can be expanded by adding other criteria, such as customer satisfaction, realization of customer goals, end user satisfaction and others stakeholder satisfaction. According to Gomes and Romao, some researchers have suggested that project success criteria should be specific for each project and stakeholders define criteria important to them at the beginning of each project. The project

success criteria are used to measure the success of a project, while critical success factors facilitate the achievement of success.

The article of Gomes and Romao (2016) refers to a case study which indicated that the success of project management is not a sufficient prerequisite for the success of the entire project. According to the study, the idea that the success of a project depends solely on whether it meets the criteria of time, cost and quality is outdated. The study found that project gain and profit management played an important role in monitoring critical success factors and achieving project goals and benefits.

7 METHODS AND MATERIAL USED IN THE RESEARCH

This chapter deals with the method of the thesis and the material used in the re-search as described in Section 1.2.

7.1 Sampling Used for Research

According to the principles of literature review, this work uses the results of several previous studies and creates a synthesis based on them. Factors affecting project failure and success are examined with the help of previous studies. The studies are published between years 2005-2022 except for one which is published in 1996.

A literature review of the success factors of the project is done by analyzing the studies and reports listed in Table 3.

Table 3. A list of articles about project successes.

	Author and subject	Publication year	Subject in English
Article 1	Lehtoniemi, J. Projektipäälliköiden kokemuksia projektien onnistumisesta ja siihen vaikuttaneista tekijöistä markkinointi- ja mainosalalla	2016	Experiences of project managers about the success of projects and influencing factors in the marketing and advertising industry
Article 2	Kiuru, L. Strategisten kehittämisprojektien onnistumisen ehdot	2011	Conditions for the success of strategic development projects
Article 3	Ilama, V. Onnistumisen askeleet – erilaista johtamista	2020	Steps to success – a different kind of leadership
Article 4	Standish Group. Chaos Report 2015	2015	
Article 5	Lementtinen, O. Langat käsissä tutkimus-, kehittämis- ja innovaatiohankkeissa	2019	Taking care of research, development and innovation projects
Article 6	Spalek, S Critical success factors in project management	2005	
Article 7	Iriate, C., Bayona, S. IT projects success factors: a literature review	2020	
Article 8	Neverauskas, B., Bakinaite, L., Meiliene, E. Contemporary approach to the possibility of project's success increase	2013	
Article 9	Datta, S., Sobuz, H., Assafi, M., Sutan, N., Islam, N., Mannan, M., Akid, A., Hasan, N. Critical project management success factors analysis for the construction industry of Bangladesh	2023	

Accordingly, the factors influencing the failure of the project is done by analyzing the studies and reports listed in Table 4.

Table 4. A list of articles about failures in projects.

	Author and subject	Publication year	Subject in English
Article 10	Riddell, T. How to avoid project management failures: 6 reasons construction projects fail	2019	
Article 11	Carver, S. Miksi suuret projektit usein epäonnistuvat?	2021	Why do big projects often fail?
Article 12	Jääskeläinen, H. Onnistunut projektin johtaminen – tunnista riskit ja vältä sudenkuopat ajoissa	2021	Successful project management – identify risks and avoid pitfalls in time
Article 13	Microsoft 365 Team. Kuusi yllättävää syytä projektisuunnitelman epäonnistumiseen.	2019	Six suprising reasons for project plan failure
Article 14	Villanova University. 3 reason why projects fail and how to avoid them	2019	
Article 15	Black, K. Causes of project failure a survey of professional engineers	1996	
Article 16	Williams, T., Klakegg, O.J., Andersen, B., Walker, D.H.T., Magnussen, O.M., Onsøyen, L.E. Early warning signs in complex projects	2010	
Article 17	Haughey, D. Eight key factors to ensuring project success	2014	
Article 18	Hurja. Onnistuneen ohjelmistoprojektin elementit	2022	Elements of a successful software project
Article 19	Harvard Business Review. Why good project fail anyway.	2003	
Article 20	Neimat, A. Why IT project fails – The Project Perfect White Paper Collection	2005	

7.2   Empirical Finding on Success and Failure of Projects

Why do so many projects fail? Is there some general common factor that can be pointed to where projects stumble or succeed? The scope and goals of the projects can vary greatly, but the projects still share the same principles for project management and control. Does the professionalism of the people participating in the project have an effect on the project success or failure? What are the factors affecting the project success and failure? In the following, this study will seek answers to these questions through a literature review.

The collected material is not linked to a specific industry, because the project activities cover all industries. The material has not been deliberately selected, but randomly picked. There has also been no geographic or publication time limitation.

The material includes various reports, white papers and studies. The material was carefully analyzed and the factors affecting the projects were collected into a table, from which common factors were searched based on the results. Based on the data, nineteen factors that affect the success of the project and twenty-two factors that affect the failure of the project were found.

7.3   Factors Affecting the Success of the Project

Table 5 contains factors extracted from the material. The table shows every factor that affects the success of the project mentioned in the material. Based on the data, nineteen factors that affect the success of the project. Some of the factors were mentioned in several materials. The total column of the table tells the total number of factors from all materials.

Table 5. A list of factors affecting project success.

	Art. 1	Art. 2	Art. 3	Art. 4	Art. 5	Art. 6	Art. 7	Art. 8	Art. 9	Total
Staying in budget	1								1	2
Staying on schedule	1									1
Customer satisfaction	1	1								2
Project team satisfaction	1									1
Monitoring progress and worktasks	1		1		1					3
Division of work and responsibility	1						1			2
Customer participation	1	1		1			1			4
Clear strategy-oriented goals		1		1		1		1		4
Management support		1				1	1	1		4
Communication	1	1	1		1		1	1	1	7
Versatile project manager		1		1	1					3
Committed and multi-professional project team		1		1		1	1			4
Proper reacting to changes		1					1			2
Proper project plan		1			1			1		3
Risk management			1						1	2
Innovations in implementation methods		1		1						2
People management skills			1	1				1	1	4
Realistic scope					1			1		2
Successeful financial entity									1	1

Nine articles dealt with the success of the project and the factors that contributed to the success. In seven articles out of nine, communication was mentioned as a factor for success. Four of the nine articles included the mention of customer participation, a clear strategy-oriented goals, management support, a professional and committed team and people management skills as a success factor. Three of the nine articles list work and project progress monitoring, versatile project manager, and proper project planning as a success factor.

Other factors influencing success were staying on budget and on schedule, client and project team satisfaction, division of tasks and responsibilities, managing risks and reacting to changes properly, using innovations in implementation methods and a realistic scope.

Many of the mentioned issues are closely related to one another in one way or another. Employee satisfaction is influenced by a clear division of roles and responsibilities and good leadership skills as well as support from management. Using up-to-date software and tools can also affect the enjoyment of work as well as affect the quality of the final product.

A well-prepared project plan includes, among other things, plans for the budget, schedule, project scope, risk management, change management, and monitoring the progress and workstacks. Many of the mentioned issues can be taken into account by paying special attention to the preparation of the project plan.

7.4 Factors Affecting Project Failure

Eleven articles dealt with the failure of the project and the factors that contributed to the success. Based on the data, twenty-two factors that affect the failure of the project were found (Table 6) . Seven of the eleven articles mentioned poor communication as one of the factors of the project's failure. Five of the eleven included a note that poor project planning and dissenting or unclear goal were part of the reason for the project failure. In addition, four of the eleven articles contained mentions of poor management, risk management gone wrong, static methods of immature techonology and inefficiency or lack of multi-professionals within the team being part of the reason for the project failure.

Other factors influencing failure were no accountability, lack of visibility, project scope failure, entity being too complex, team loyalty or motivation issues, unclear roles and responsibilities, delay in decisions, lack of support from management, improper reacting to changes, scheduling issues, improper funding, lack of resources, requirement instability, lack of monitoring progress as well as lack of project closure.

As with the factors that affect the success of a project, the factors that affect the failure are often related to each other. Improper work management affects employees, work quality and the progress of processes, and thus also the schedules and budget.

Ambiguous roles and poor human resources affect both employee satisfaction and the quality of the final product.

Table 6. A list of factors affecting project failure.

	Art. 10	Art. 11	Art. 12	Art. 13	Art. 14	Art. 15	Art. 16	Art. 17	Art. 18	Art. 19	Art. 20	Total
Poor planning	1					1		1	1		1	5
Poor management	1					1				1	1	4
Poor communication	1	1		1	1	1			1		1	7
Risk management gone wrong	1				1	1		1				4
No accountability	1									1		2
Lack of visibility	1											1
Project scope failure		1			1			1				3
Too complex entity		1										1
Dissenting or unclear goals			1	1			1			1	1	5
Team loyalty or motivation issues			1					1				2
Unclear roles and responsibilities			1							1		2
Delay in decisions			1									1
Static methods or immature technology				1			1		1	1		4
Lack of support from management				1		1					1	3
Inefficiency or lack of multi-professionals within the team				1			1		1		1	4
Improper reacting to changes					1							1
Scheduling issues					1				1			2
Improper funding						1			1			2
Lack of resources						1						1
Requirement instability							1		1	1		3
Lack of monitoring progress								1				1
Lack of project closure								1				1

7.5   Comparison of Key Factors of Success and Failure

Table 7 summarizes all the different factors mentioned in the material. The factors are listed in such a way that the factor with the most mentions is at the top and the factor with the least mentions is at the bottom of the list. The factors affecting the success and failure of the project are separated into columns.

Table 7. A comparison of success and failure factors.

Factors of success	Value	Factors of failure	Value
Communication	7	Poor communication	7
Customer participation	4	Poor plannig	5
Clear strategy-oriented goals	4	Dissenting or unclear goals	5
Committed and multi-professional project team	4	Risk management gone wrong	4
Management support	4	Static methods or immature technology	4
People management skills	4	Inefficiency or lack of multi-professionals within the team	4
Monitoring progress and worktasks	3	Poor management	4
Proper project plan	3	Project scope failure	3
Versatile project manager	3	Lack of support from management	3
Customer satisfaction	2	Requirement instability	3
Innovations in implementation methods	2	Team loyalty or motivation issues	2
Staying in budget	2	Scheduling issues	2
Division of work and responsibilities	2	Improper funding	2
Proper reacting to changes	2	No accountability	2
Risk management	2	Unclear roles and responsibilities	2
Realistic scope	2	Lack of visibility	1
Staying on schedule	1	Too complex entity	1
Project team satisfaction	1	Delay in decisions	1
		Improper reacting to changes	1
		Lack of resources	1
		Lack of monitoring progress	1
		Lack of project closure	1

Communication was cited as the factor most influencing the project success, and bad communication was equally the most influential factor in failure. Therefore, it can be stated that communication has a very big impact on the final result of the project.

The goal of the project is mentioned equally at the top of both lists; clear strategy-oriented goals help in the success of the project, while unclear and dissenting goals contribute to the failure of the project.

The employees' motivation and professionalism also contribute to the success or failure of the project's outcome. Motivated and skilled employees take the project towards success, while unmotivated and unprofessional employees can influence the failure of the project with their own actions.

One of the important factors of success was the follow-up and monitoring of the work. The factor in question was also mentioned as a factor influencing the failure of the project, but not until the end of the list.

Improper planning was one of the most essential factors in the project's failure. Weaknesses in planning or the absence of it understandably contribute to the failure of the project. In the list of factors of project success, the project plan was mentioned only three times as a factor in project success. On the other hand, the things almost at the top of the list, such as the project goal and work monitoring, are dealt with in the project plan. It can be assumed that the planning mentioned in the material is related to the planning of everything related to the project and not so much the project plan itself to the content or preparation of the document.

Surprisingly, customer dissatisfaction has not been mentioned at all as a factor affecting the failure of the project, but as a factor affecting success, the value is mentioned and specially customer participation is seen as a high factor of project

success. It would be assumed that in many respects an unsatisfied customer is the same as a failed project.

The last one that received the many mentions in relation to the success of the project is the competence and versatility of the project manager. The project manager is not directly mentioned in the factors affecting the failure of the project, but many things in the failures are directly related to the characteristics and duties of the project manager. Factors influencing the failure of the project include, for example, poor management, problems within the team, scheduling problems, unclear roles and responsibilities, lack of resources, and reaction to changes. All the above-mentioned matters are part of the project manager's duties or in project manager's area of responsibility.

A realistic scope is one of the factors influencing the success of projects, but it has not been given much importance. On the other hand, project scope failure is one of the reasons why a project can fail. Therefore, it can be thought that a limited scope in itself does not yet guarantee a successful project, but an unclear and overly broad scope is a possible factor for project failure.

The same logic probably also applies to the use of technology and tools. The use of innovative technologies and methods can have a positive effect on the success of the project, although it is not a prerequisite for the success of the project. On the other hand, the use of immature technology can be a significant reason for project failure.

8 DISCUSSION AND CONCLUSIONS

This chapter contains the discussion and conclusions of the study and they are discussed through the research questions and the theoretical basis. At the end of the chapter, there are suggestions for further research.

8.1 Theoretical contribution

What factors are typical of projects that fail?

According to Artto et al. (2008, 47-48, 101), the goal of the project is identified and defined in the initiation and definition phase of project life cycle. The planning phase also includes identifying different tasks of the project as well as resources. In the implementation phase, responsibilities and operating methods are discussed and specified.

According to Allen, McLees, Richardson and Waterford (2015), project planning is one of the most critical phases of a project and understanding the scope and goals of the project is essential. Both Artto and Ruuska state that the project plan is considered to be a central instrument of project management hence it should be something which worth investing time and effort in. (Artto et al. 2008, 05; Ruuska 2012, 50.)

As can be seen from the previous statements, project planning is an important part of both the success and failure of the project as it creates the basis for the implementation of the project. Based on the research carried out in this thesis, bad project planning is one of the most essential reasons why the project fails.

Artto et al. (2008, 232) and Pelin (2011, 286) state that communication style and methods inside the project is something that should be planned already in the project planning stage. It is known that communications affect several matters in

the project, such as workflow, information sharing and atmosphere of the project as well as attitudes inside teams. (Kauhanen 2012, 174; Mäntyneva 2016, 87-88.)

According to the research done in this thesis, poor communication is the most important reason for project failure. Bad communication can occur both within the supplier's team or between the customer and the supplier. Because poor communication has such big effects, the quality of communication within the project should be invested right from the beginning of the project.

What are the key characteristics of successful projects?

Weak communication is a risk to the success of the project, as stated earlier. Equally successful and open communication contributes to the success of the project. According to Projektiyhdistys (2012, 27) a prerequisite for a successful project is agreeing on common rules of communication and actions in the project. This contributes to the creation of a good team spirit. A good atmosphere affects people's motivation and general attitudes, which in turn are reflected in their work. Well-managed communication, therefore, directly affects greatly the success of the project. (Kauhanen 2012, 174; Mäntyneva 2016, 87-88.)

Both Artto et al (2008, 05) and Ruuska (2012,50) state that the prerequisites of project success are rooted in the project plan and its preparation. According to the research done in this thesis, having clear strategy-oriented goals contributes to the success of the project. The goals of the project are already defined at the beginning of the project. This is why it is important to invest in precise planning at the beginning of the project.

When discussing the project goals, it is critical to keep the conversation direct and open between the supplier and the client. The goals, limitations and possible obstacles of the project must be known to everyone from the beginning. Accord-

ing to the research done in this thesis, cooperation with the client and the client's involvement in the project increases the chances of the success of the project.

8.2   Managerial Contribution

The initiation and definition phase of the project is significant for the success of the project because decisions regarding the project purpose, goals and implementation method of the project are made. The decisions made in the initial phase must be compatible with each other and they must enable the successful implementation of the project.

To avoid problems, it should be remembered that the planning of project objectives, scope, schedule, resources and costs, as well as risk and quality management are all tightly linked together. A carefully made project plan, therefore, saves time, resources, and gives the opportunity to avoid many problems. It also clearly communicates the purpose and goals of the project to the project participants and stakeholders.

The importance of a project plan cannot be emphasized enough. The project plan explains, for example, what will happen during the project, where and when the project is carried out, how it is scheduled, who is responsible for what and who performs project tasks as well as how different project tasks are carried out. If these areas are not defined sufficiently, it will induce challenges in the later stages of the project and may even lead to the failure of the project.

One of the most important tasks in the planning phase of a project is project scheduling, because according to research, most projects have challenges being completed within the planned schedule. The more critical it is to stay on schedule for the project in terms of success, the more detailed planning should be defined.

In order to minimize the challenges, the focus must also be on proper risk management; the earlier the risks are identified and assessed, the better they can be managed during the project. It is imperative to put effort into preparing a risk management plan and make use of the available resources.

The scope of the project defines the boundaries for the project. If the definition is not done carefully, the risk is that the project will expand out of control. To avoid problems and misunderstandings, it is important that the key stakeholders are identified and included in defining the scope of the project. The project manager's responsibility is to keep the scope appropriate and not let it grow too large.

The project manager's challenge is to engage the project team. The project manager must assemble a team which has a common goal and a common vision of reaching the goals. The importance of communication and the flow of information is great in any project, but in order for the project to be successful, it is necessary to truly focus on communication. In the literature review, the result clearly showed the effect of communication on both project success and failure.

Communication means much more than just sharing information. Open communication also means the freedom to express one's opinion and the ability to receive feedback. Today, agile methods are very common and to be successful, the team of an agile project must discuss openly, clearly and giving and receiving feedback.

Successful communication also means communication to both internal and external stakeholders. It is important for information to flow in both directions so that any problems or wishes are heard.

Due to the importance of communication, it is recommended to draw up a communication plan at the beginning of the project. The project manager must also ponder different ways to maintain an open discussion culture within the project.

Figure 2 shows the path to a successful project. The figure contains the factors that emerged in the literature review; communication, a competent project manager, a well-prepared and precise project plan and optimized resources.
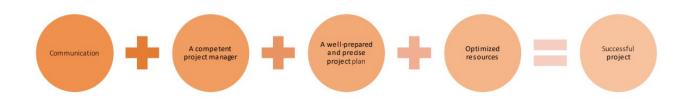

Figure 2. The path to a successful project.

By following the path, the success of the project is optimized. The path indicates the most critical issues that must be considered both in the planning of the project and in the implementation of the project.

8.3   Further research

This thesis discussed issues related to the success and failure of projects. Based on several studies, it has been established that there are still major challenges in project management and that most IT projects fail in some way.

As in the research of this thesis, and as a result of many other studies, the reasons for the failures are clearly visible. Similarly, the things that contribute to the success of the project are known.

Taking everything mentioned above into consideration, it seems strange that there are still challenges in project management and no lessons have been learned from history. It would be good to focus future research on this aspect; why are there still challenges in project management, even though it is known which things should be invested in?

Or why are generally negative things not addressed and focused on in the initial stages of the project?

Information about the facts affecting the background alone will not help if it is not known why things do not change. Therefore, it would be critical to know why the necessary changes are not made in project management to improve the end result.

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