PROJECT MANAGEMENT – IDENTIFICATION OF VARIABLES THAT IMPACT PROJECT SUCCESS IN AUSTRALIAN ORGANIZATIONS

by

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DISSERTATION

Presented to the Swiss School of Business and Management Geneva

In Partial Fulfilment

Of the Requirements

For the Degree

DOCTOR OF BUSINESS ADMINISTRATION

SWISS SCHOOL OF BUSINESS AND MANAGEMENT GENEVA

<December, 2024>

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Dedication

My Doctoral dissertation is dedicated to my children – Viktor, Aaron, Evelyn

Never give up – Everything, you need to reach your dreams, is in you.

Acknowledgements

"The purpose of the education is to turn mirrors into windows."

Sydney J. Harris

Special thanks to Dr. Minja Bolesnikov and Dan Misra for being an integral part of my educational journey. Thank you so much for your guidance and recommendation in helping me to me complete this dissertation successfully.

I am also thankful to Swiss School of Business and Management, Switzerland for the opportunity to work on my Dissertation.

I must say a huge thank you to my family. There are no words to express my feelings for them. I am so grateful for their patience, their support and their endless love. I really appreciate how they managed my frustration if something was wrong. I love you all!

Last but not least, I would also like to thank the participants in the research for their time and patience with me for those long interviews, follow-up questionnaires and numerous discussions. Without their sincere support, I could never finish this dissertation.

Thank you everybody for helping me to achieve my secret dream!

ABSTRACT

PROJECT MANAGEMENT – IDENTIFICATION OF VARIABLES THAT IMPACT PROJECT SUCCESS IN AUSTRALIAN ORGANIZATIONS

Csaba Harcz
2024

Dissertation Chair: <Chair's Name>
Co-Chair: <If applicable. Co-Chair's Name>

The main objective of my dissertation work is, to examine different aspects of the project success criteria (requirements, standards) and success factors (circumstances, facts and influences) at different organizations in Australia that can influence the success of a project. As a result of my dissertation work, I would like to help the leaders, project managers, and project members by giving them a comprehensive picture of the aspects of the current situation and with this help, to make projects more effective and more successful in the future.

My dissertation work will present a literature review that contains the introduction to projects, project management, the different applicable leadership styles, success factors, and success criteria.

During the empirical study, I used quantitative data collection as the primary research methodology. In other words, I used a survey to reveal those elements that influence the success of projects.

Processing the results of the research, it has been established that the positions of project members are different, but regarding both success factors and success criteria, the same element could be revealed. As a consequence of the assumption that differences can be detected in the opinions related to various positions, it was rejected. The impact of greater service years at the examined Australian companies on success factors and success criteria was also studied. The result of this research did not confirm this assumption either.

Based on the research results, suggestions have been made for further research directions in the future. Comprehensive research with a larger number of elements can prove the correctness of the questions and assumptions formulated during my research. It can also identify research directions that can be used to evaluate a project more accurately, whether it is successful or failed.

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CHAPTER I:

INTRODUCTION

Today's global and complex economic environment forces organizations to continuously renew and adapt, and companies initiate more and more projects to achieve their strategic goals. Projects play an important role in a country’s economy or a life of a company, as shown by the World Bank's survey conducted in 2008, according to which, the amount was spent on projects was about 22% of the GDP in the world economy while in some emerging countries it was higher. In India it was 39%, while in China it was even higher, 43% of the country’s GDP. (World Bank, 2008)

Defined as a profession and a young scientific field, project management has many questions and topics to be solved and discovered Its explosive progress has presented many challenges to practitioners and the academic world in recent decades. In the middle of the 20th century, at the dawn of modern project management, the US military industry, the National Aeronautics and Space Administration (NASA), and the construction industry found indisputable merits in the development of project management knowledge. From the beginning of the 1980s, the issue of developing project management knowledge was gradually taken up by the largest international project management professional organizations. The best known of which are the American Project Management Institute (PMI), the European-based International Project Management Association (IPMA), the United Kingdom-based Association for Project Management (APM), and the Australian Institute of Project Management (AIPM). The standards, developed by these organizations summarize the professional foundations of project management which were published with the support of these organizations. This

contributed to the general recognition of project management as an independent scientific field and to its separation from other management sciences.

Within the project management science, project success is one of the longest-researched and well documented, popular research topic. Despite this, even today, it is still difficult to define the general definition of the project success itself.

1.1 Research background and scope

We can say - the projects are the same age as humanity, arguably. Just sit down and look a back in time. Look back to the construction of the Egyptian pyramids. Even with today's eyes, it is a big investment, a fantastic procurement, supply chain and a complex construction project - but what could it have meant in the Ancient Egypt? Or think of a campaign (e.g. election, promotion) or even organizing an exhibition today – all of them are full of challenges. The person who led the building of the pyramids, who coordinated and brought these events together in those early times, was not even called a project manager, but today we can use the labels project manager and project for the pyramid construction projects.

The success of a project in different workplaces and organizations can be defined in many ways. According to the Project Management Institute's guide, the project was created temporarily due to the creation of "a unique product, service or result". (PMBOK, 2000, p. 4). Another definition of the project by Aggteleky & Bajna, 1994, Nemeslaki and Webster & Knutson is that a project is a coherent, complex task which, due to its uniqueness and once-off occurrence, cannot be solved amongst regular daily tasks. In order to achieve the goal, to solve a problem, more effort is needed to create and achieve "something" that does not yet exist for the organization. (Aggteleky & Bajna, 1994), (Nemeslaki, 1995, p. 7) (Webster & Knutson, 2011)

But let's move to modern practical terms, not just using books, theories, or old examples.

It is highly likely that everyone or a close friend has met a project during their life. It could be building a new house, replacing windows, or seeing an infrastructure project while driving, building a new highway, or a new apartment complex construction site. These are all projects. But how would you define "success"? With common sense, everyone would say, success when we build within the pre-defined time frame and budget, and the outcome or quality makes us happy and meets our expectations. But is it always the correct way? Is it possible that the person, who is evaluating the project in these terms is mistaken in their criteria or is using an outdated?

Let me answer this question with two, well-known projects and their outcomes.

The Sydney Opera House

In 1954, a tender was issued for the construction of a new opera house in Sydney. 233 architects from 32 countries sent their designs, plans. The winner was a previously unknown Danish architect, Jørn Utzon. His proposed design was inspired by the sails often seen in Sydney's huge marina. The original cost estimate in 1957 was $7 million, with a planned 4-year construction from 1959, with a completion date of 26 January 1963 (Australia Day). But the outcomes were different. The Opera House was officially completed in 1973 and cost a total of $102 million, 1357% above than budget. Would this project be called a success based on time, budget and scope? Not really. But as The Sydney Opera House became the symbol of Sydney, and in 2007 it was added to the UNESCO World Heritage List and more than 10.9 million people visit the Opera House every year – it changes the evaluation, "judgement" and the project is assessed with a different perspective. But there are still many other facts which make The Opera House

“famous”, and therefore arguably we can say, this construction project was a success and not a failure.

The Eiffel Tower

To understand why the Eiffel Tower was a big “attraction” in 1889, we need to see the local and worldwide circumstances at the time. By the end of the 1880s, many architects around the world were driven by the ambition to build a monumental tower "higher than a thousand feet" (about 305 m) but encountered countless technical problems. For example, in 1885, with great difficulty, masons managed to raise the 170-metre obelisk in Washington. At that time, the “weak” French Republic needed some grand, glorifying monument on the 100th anniversary of the 1789 Revolution. In 1878, the government started organizing a great world exhibition, targeting the opening date to May 5, 1889. In this environment, to present something big and need a glorifying monument at the exhibition the French government approved the plan to build the Eiffel Tower on May 1, 1886, and Eiffel could sign the contract and start the construction. (“Fun Fact” – The tower was not Eiffel’s idea and it was first suggested as a structure to be built in the city of Barcelona for the 1888 Universal Exposition. Originally, the idea of the tower was announced by two Eiffel & Co engineers and after initial reservations, Eiffel embraced the idea of his colleagues and purchased the registered patent. Later, Eiffel saw the potential in it and successfully promoted the plan to the French Government after The Spanish authorities refused the project because it was "too expensive" and an "ugly thing") The 1887 contract between Eiffel and the French Government said that after the exhibition, the tower would have been demolished. Construction began on January 28, 1887, and 2 years later, on May 15, 1889, the tower was opened to the public. The project was completed on time, within budget and met all

of the expected quality standards. Since then, the tower has always divided the French - many love it, but many do not and her nicknames reflect this. Some call the Tower "Ugliness", others "Old Lady". Would this project be called a success based on our general judgement of time, budget and scope? Yes absolutely. Except for the demolition step as she still stands in Paris today. The Eiffel Tower has gone through many trials, and today we know it as one of the most famous buildings in the world and the most recognisable icon of Paris. The Symbol of Paris. In 2007, the famous tower also started as a candidate for the New Seven Wonders of the World, although in the end not included.

1.2 Research Problem

In summary, it is clear from the above mentioned "official" definitions and the two, well known projects' outcomes that since different projects always use different resources, they are scheduled different time periods, a shorter or longer period of time. Therefore, it is necessary to plan, monitor, control the execution, evaluate the plan, manage the different risks and solve the different conflicts, and generally, take care of the project aspects. Then, after the project closure, run the "lessons learned" exercise and "judge" – whether the project was successful or failed. This raises the question: does every participant in a project see the project in the same way, or do they use different criteria to judge success or failure? Based on what the Program/Project manager, IT Departments, Business Analysts or Business side/End Users say, can we really determine whether the project was successful, it really reached the pre-determined project scope or not? What are the main drivers for their opinion?

It is sensible to analyse and understand the relationship between the different project members' opinions about determining project success or failure.

1.3 Purpose of Research

My doctorate research and dissertation aims to investigate and identify what factors determine whether a project is successful or failed. This “judgement” can be very different in many organizations or even, within an organization, based on the project participants’ opinions or roles within the project.

During my DBA journey, I will investigate and try to identify the success criteria (requirements, standards) and success factors (circumstances, facts and influences) with hypothesis testing, answering

- Whether the different positions held by the project team members have or do not have an impact on their opinion of the project “judgement,” and
- Whether the greater work experience has or does not have an impact on their opinions of the project “judgement”.

1.4 Research Questions

My doctorate research and dissertation aims to identify the success criteria (requirements, standards) and success factors (circumstances, facts and influences) for various projects undertaken by Australian organisations, as well as the ways in which the positions of project participants influence the project's evaluation.

Further, I will examine whether greater work experience within the examined Australian organization has or does not have an impact on the employees' opinions of success criteria or success factors.

In my DBA dissertation, I will present the definitions of the project, and in addition to the traditional approach, I will present the success criteria and success factors to determine whether a project is a success. This information and, principals are

necessary to set up the long-term objectives, the research questions, the research model, the research methodology - how I would like to collect, validate, analyse the collected data and to define the research assumptions.

I will conduct the research via my professional connections at different Australian organizations to verify, prove, disprove theories, or come to a surprising conclusion. During the later chapters, I will present the research model, explain how the research was conducted, and then the processing of the received answers, and present the interpretation and comparison of the analysis of the collected data. The analysis of the results and the aim of the research are to determine the project success factors, success criteria, and main components that are affecting the success of a project within the examined Australian organization and the existing relationships between them.

I formulated the below research questions to achieve my research goal. When formulating the questions, I also considered the processed theoretical formulations and my personal and professional experiences. While writing my doctorate dissertation, I will search for answers to the following questions.

Question 1

- Is there a difference in the opinion of the project members due to their role in the project in judging the success criteria?

Question 2

- Is there a difference in the opinion of the project members due to their role in the project in judging the success factors?

Question 3

- Is there a difference in the opinion of the project members due to their greater service years at the examined organizations in judging the success factors?

Question 4

- Is there a difference in the opinion of the project members due to their greater service years at the examined organizations in judging the success criteria?

Based on the analysis on the incoming answers, validation and the outcome of the analysis, my further goal is to be able to make a proposal to the different financial institution, in which areas it is worth developing, need improvement, so that their next projects can be even more successful.

1.5 Research assumptions – hypothesis

In order to answer the research questions of my doctorate dissertation, as well as considering the theories related to my research and my workplace experiences, I formulated the following assumptions.

1. Assumption

In the examined Australian company, a difference can be seen in the judgement of the elements describing the success criteria of the project members based on their role in the project.

2. Assumption

In the examined Australian company, a difference can be seen in the judgement of the elements describing the success factors of the project members based on their role in the project.

3. Assumption

In the examined Australian company, there is a difference in the assessment of the success criteria regarding greater service years at the examined organizations.

4. Assumption

In the examined Australian company, there is a difference in the assessment of the success factors regarding greater service years at the examined organizations.

1.6 Research model

The research model was developed to visually display the connections and to set the research goals, research questions, and assumptions.

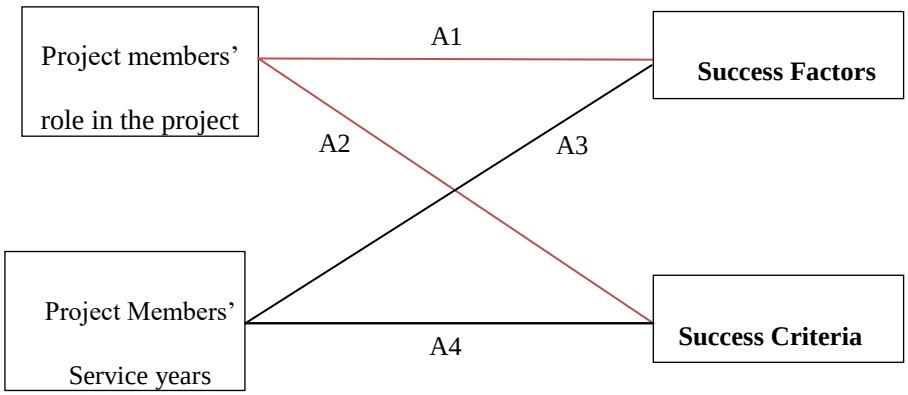

Figure 1: Research Model

(own compilation)

In the research, based on the reviewed literature and my personal experience, I will analyse the factors and criteria affecting the success of projects in the examined Australian organizations. Relying on theory and practice, I will evaluate success factors and success criteria of the different projects carried out at the examined Australian organizations based on the positions of the members of the key areas and through the service years these key members spent at the organization.

1.7 Significance of the Study

The selection of my research area and topic was primarily influenced by my professional background. So far, during my career, I have always taken part in projects - either as a project manager or a project member, either on the client side, or the vendor side. Since I have always worked with large, international companies and the project success was often defined differently in the project closing discussion, this motivated me to examine the success criteria and success factors of the projects in my dissertation.

In a broader sense, the area of my research is project management, but in a narrower sense, the evaluation of the project's success is based on the opinions of the members involved in the project. Of course, even though this is a large enough area for me to deal with all its aspects within the framework of my dissertation, some topics will not be explained in more detail, but I will mention that they have an impact on the projects and their success definition.

Project management brings significant, new impulses to solving problems - a management concept that can result in the realization of specific goals through the organized implementation of the project conception process. Project management helps to reduce project risks through systematic planning, coordination, and continuous monitoring. But how can we decide whether a project has succeeded or failed?

As the goal of my research related to my dissertation, I stated that, using the research results of my dissertation, I can propose the areas and directions where a development can help the organizations to have more successful projects. To this end, a research question was formulated as to whether there is a difference in the opinions of the Australian companies and the employees participating in the research in the assessment of success factors based on their positions, and whether greater service years have an influencing effect on the assessment of the success of the project.

1.8 Research Design

Conducting the research

For the chosen research topic of my Dissertation, a questionnaire survey is an appropriate research option. Since questionnaire research is a quantitative research method, sufficient responses will provide a solid basis to confirm or refute conclusions and assumptions. An additional argument in favor of using a questionnaire survey versus verbal interviews is that the questions are clear, so the respondents can also give clear answers.

There will be no ambiguous statements in the questionnaire, and I will not influence the respondents' opinions by wording the questions. During the questionnaire research, I will use multiple-choice, closed question forms because the answers will be easy to handle and responses can readily be measured on a scale. Filling in the questionnaires will be done using a self-filling method, so the respondent will decide when to complete and return the questionnaire to me. There will be no personal meeting regarding the questionnaire.

Below flowchart illustrates the steps and the different activities of the questionnaire

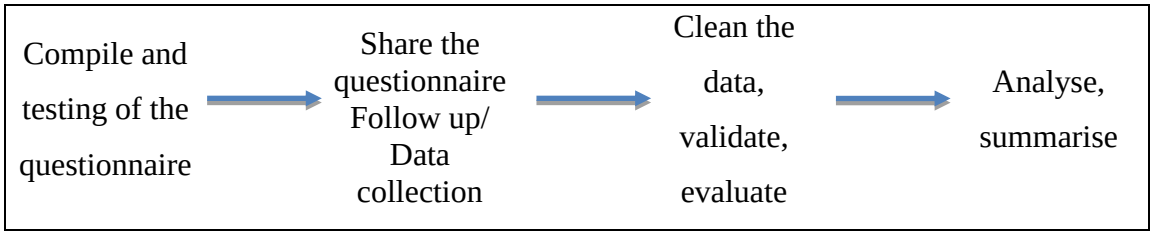

Figure 2: Research Activities
(own compilation)

Compilation of the questionnaire

For the preparation of my doctorate dissertation research, I carried out quantitative data collection as primary research. In other words, I mapped the conditions, success factors, and success criteria influencing the projects using a questionnaire survey. (See Appendix 1for the questionnaire)

Conceptualization

I will electronically distribute the questionnaire to the participants who are employed by various Australian companies, as well as by different departments within those companies. Since my doctorate dissertation focuses on “Identification of variables that impact project success in Australian companies”, a number of organizations, areas and positions are targeted for. Participants are employed by various Australian businesses, and regardless of their roles and positions within the project or organization, they all will receive the same questionnaire

Operationalization of variables

The questionnaire starts with a general introduction and explanation. I have described for the research participants what the purpose of the research is, why I request their help, how they can populate the answers and what are the possible answers to the questions. The questionnaire also contains general questions about the participants‘ organization. The questionnaire includes questions about the circumstances affecting the projects, the success factors and success criteria, the duties of the project manager, the afterlife of the project and the project objectives, and the available resources. Using the questionnaire, I will assess the opinions and satisfaction of the research participants in the form of closed questions. The respondents are able to mark the answers on a scale of 1-6.

When selecting research participants, I will consider the field in which they work, and the information collected will reliably convey the opinions of the respondents and the conclusions drawn from the collected information. Results can be evaluated, and the obtained sample covers the base population. The different project areas will faithfully represent the real project members' positions and departments: project management, end users, IT specialists (programming, providing technical background), and business analysts. Specialists from all key areas will be brought in, but at the same time I will not be able to achieve full representation since in any rapidly changing project team structure, it is not possible to accurately identify the actual size of the base population of each area within the company. Therefore, I will try to ensure that the individual groups are included in the sample in almost the same proportion, so the possible differences in attitudes can be better assessed fairly avoiding weighting towards one area over another. Participants have adequate work experience in their respective fields and are of various nationalities.

Collection of the Data

The questionnaire data collection will be approximately 6 months long, followed by data cleaning, validation, analysis, and the final summary.

Data Analysis

After collection, preparation of the data (entered into statistical software), I will run different statistical analyses and hypothesis testing.

I will use Microsoft Excel and an advanced statistical analysis program to process (SPSS - Statistical Package for the Social Sciences), evaluate the collected data. During the processing of the received answers, I will prepare different statistical analyses appropriate to each aspect being analysed.

The processing of the questionnaire and handling of the response data, during the evaluation will only be processed based on the participant's functions in the project and the service years they spent at the Australian organisation. Responses will remain anonymous, and participants will not be named or cannot be identified.

CHAPTER II:

LITERATURE REVIEW

2.1 Introduction

The topic of my Doctorate dissertation is to identify variables that impact project success in Australian companies. For successful research, I would like to start with appropriate theoretical foundations.

Projects (whether small or large) are important tasks for both local and international companies, regardless of the company structure or size, but sometimes we can observe that people get confused by the generally used definitions in project management, such as project, subproject, program and portfolio. For my research to be successful, first, it is necessary to establish the definitions of these (what definition and meaning I will carry out the study with) and understand the connections between them.

I will present how the international literature defines the concept of project, subproject, program and portfolio. Also, it will be presented, in connection with the topic of my Doctorate dissertation thesis, the various project organizations and their structures, as well as the definition of project management and the applicable management and leadership styles of the project managers.

After establishing the foundations and the base project knowledge, thanks to the need to measure the success of the projects and the "evolution" of the project and project management research, I will present and explain the progression, the approaches, and the research areas of the project success criteria and project success factors that can affect the projects defined by the international literature.

2.2 Program, Portfolio, Project

The international literature formulates the concept of project and project management based on several aspects.

According to the Project Management Body of Knowledge (PMBOK) - the project was created on a temporary basis in order to create “a unique product, service or result.” PMBOK (PMBOK, 2000, p. 4)

“Project is a unique venture with a beginning and an end, conducted by people to meet established goals within parameters of cost, schedule and quality.” (Buchanan & Boddy, 1992, p. 8)

On the other hand, Weiss and Wysocki follow an explanation that defines the characteristics of a project separately, as listed below: (Weiss & Wysocki, 1992)

- Complex and numerous activities;
- Unique – a one-time set of events;
- Finite – with a begin and end date;
- Limited resources and budget;
- Many people involved, usually across several functional areas in the organizations
- Sequenced activities;
- Goal-oriented;
- End product or service must result.

Görög says, a project is an activity “the duration of which (start and end) and the costs of completion are defined and aimed at achieving a certain result (goal)” (Görög, 1999, p. 16) or other words, “which differs from the normal day-to-day activities of the

organization and thus constitutes a one-off, complex task for the organization." (Görög, 1999, p. 32)

In other words, the project is a coherent, complex task that, due to its unique once-off nature, cannot be solved during the day to day, business as usual work. In order to achieve the project goal, it is necessary to invest more effort to create and achieve "something" that does not yet exist for the organization. (Aggteleky & Bajna, 1994), (Nemeslaki, 1995), (Webster & Knutson, 2011).

In their book, Görög and Ternyik wrote that "... a project is any activity that represents a single and complex task for an organization, where the duration and the costs (resources) of its completion are defined and has a clear goal (result) - the creation of something that does not exist for the organization at that time. " (Görög & Ternyik, 2001, p. 18)

International Project Management Association (IPMA) defines the project as a "time- and cost-constrained operation to release a set of defined deliverables (the scope to fulfil the project's objectives) up to quality standards and requirements." (IPMA, 2006, p. 128)

Based on the definitions and approaches listed, we can say the following about a project:

- Is a one-time task other than a daily routine;
- Has a fixed duration (fixed start and end dates);
- Has a fixed budget;

- Its purpose is predefined (product, service, result);
- Is a series of connected complex activities;
- Requires more planning;
- Requires special knowledge and resources required;
- Most of all, creating something new or different.

Having understood what the project is, next step should be to define what project management is. In a later chapter I will cover this topic in more detail but for now will treat it briefly. According to the Project Management Institute (PMI), project management is the implementation of different sets of skills, tools, techniques and knowledge during the different phases of a project to deliver the pre-determined scope and meet the stakeholders' and the business' expectations and requirements. (PMBOK, 2000)

The Individual Competence Baseline of International Project Management Association (IPMA – ICB) uses a more detailed definition and describes project management as a four-phase process of a project (planning, organizing, monitoring and controlling). It also declares the stakeholders and the project members are fully involved to meet the project goal within the pre-defined criteria for time, cost and to deliver the expected scope or quality. Also, the International Project Management Association says, project management is the coordination and organization of the project tasks, leading the project members, tracking, following the progress of the project and reporting, informing the key stakeholders, the project committee. The main requirements to be a project manager are to optimize the cost and available resources, minimize the risks and organize the project accordingly. (IPMA, 2006)

The project management activity supports the different levels of projects: projects, sub-projects, programs and portfolio. The next illustration presents the relationship, position and dependencies between the project portfolio, program, project and subproject. Portfolio is the highest level; it has a broader delivery scope (strategic objectives) than:

- program which has more projects, and
- projects which might be divided into sub-projects when it is necessary.

The below figure created by Hacioglu helps to see and understand the connections and the relationships between the Project Portfolio, Program, Project and Sub-Project. (Hacioglu, 2017)

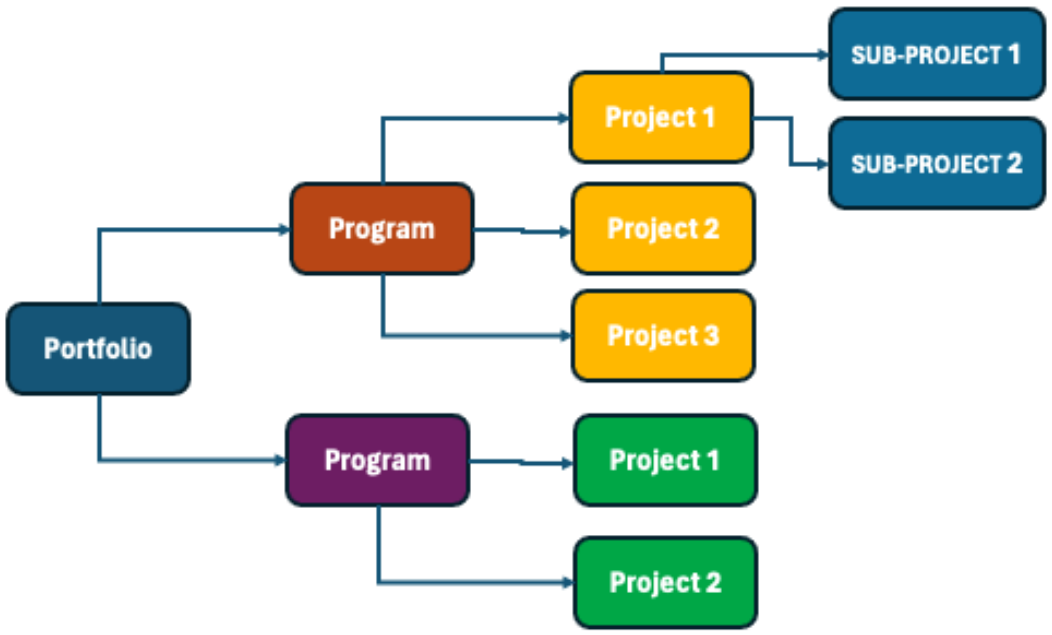

Figure 3: An Overview of Portfolio, Program, Project, and Subproject
(Hacioglu, 2017, p. 5.)

When we would like to talk about more projects, or groups of projects we also need to define what Portfolio means regarding this subject.

A Project Portfolio is a list or report of all the running projects of a company that help to achieve its strategic goals and objectives. A portfolio can contain all the projects of a company, including every department or only a division, or just a department's projects. (Bonnie, 2015) He also shares a similar perspective with Buttrick about the definition of Project Portfolio but he says a Portfolio is not just a list, it needs to be executed correctly to achieve a successful delivery. “Directing the individual project correctly will ensure it is done right. Directing 'all the projects' successfully will ensure we are doing the right project”. (Buttrick, 2009, p. 52)

After we defined what a project or a project portfolio is, we can compare them to see the differences between them and we can land on the conclusion - project management is about a correct project delivery, execution, while project portfolio management is about choosing and executing the most useful and helpful projects.

As we stated above, projects and programs are different and unfortunately, based on my experience, people get confused quite often because they do not understand the differences between them, or they just ignore the differences. Since organizations always have projects and someone who coordinates and manages these projects or programs, the terms have been used interchangeably. A real-life example is the Manhattan Project which produced the first atomic bomb in the World War II. We call it a "project" but if we look at the whole picture, we can see that when they defined the scope of the project (2 atomic bombs), they had nothing - no people, no factories, no atom, no knowledge. So, to deliver the pre-defined scope, they had to manage many major projects, sub-projects such as the construction of factories and their operation, not to mention the atomic bomb

research itself. So, looking back, the Manhattan Project is a perfect example of the modern definitions of a complex and integrated program of work, even though it was called as project. Unfortunately, this misunderstanding, this confusion in the definitions and in the differences still exists today. (Weaver, 2010)

Project Organization	***Projects***	***Program***	***Portfolio***
Purpose	*Tasks or piece of works*	*2 or more connected projects*	*Project and/or Program collection*
Duration	*Short/medium defined start and end date*	*Might run over years defined start and end date but the end date might be changed (based on project progress)*	*Over years, defined start and end date but the end date might be changed (based on underlying program and project progress)*
Key Activities	*Planning, scoping, budget, quality*	*Verification, validation*	*Strategic planning, governance*
Outcome	*Product, service, result*	*Overall enterprise benefit of underlying projects*	*Meets strategic expectations/objectives of the organization*
Management	*Project Manager*	*Program Manager*	*Portfolio Manager*
Required Skills	*Communication, Planning, People Management, Organization, Conflict Management*	*Leadership, Planning, Communication, Decision making, conflict management, Analytical mindset*	*Leadership, Strategic Planning, Communication, Decision making, Analytical mindset*

Table 1: Projects, Programs, and Portfolio comparison
(own compilation)
(Based on PMBOK 2000, Papp 2001, IPMA 2006, Buttrick 2009, Weaver 2010, Hacioglu 2017)

In summary, from the definitions presented above, it is clear that a project always uses different resources, it is "created" for a shorter or longer period of time. Therefore, it is necessary to plan, measure and monitor the length and the progression of the various processes and the overall project, and compare progress with the preliminary plans. (Papp, 2001)

Project and program have two main differences:

- a program is set up to achieve a strategic goal or a mission, and to do that with several projects and continuous activity.

- the program goal or mission might not be specific; it can be wider than a project scope or goal. While a project could be a tactical process within a large strategic program, it has a clear set scope, an exact start and finish date and can have many sub-projects. According to Buttrick, a project, as a concept, can be defined under a program. (Buttrick, 2009) Likewise, Weiss and Wysocki clarify the difference between a project and program by pointing out the fact that a program is larger in scope and may comprise multiple projects. (Weiss & Wysocki, 1992)

It is also important to underline the scope or goal of the projects. Without formulating and recording the goals, comparing the plan against the actual status, or predict the future, expected result based on the currently available information - we would only complete the tasks instinctively, without clear direction on whether those tasks will help achieve the goal actually. Care must be taken that the objectives are examined from several perspectives. For example, there are quantitative and qualitative goals and there are goal priorities, which are necessary to be considered to avoid goal conflicts.

2.3 Definition of strategic programs and projects

The basic purpose of corporate projects is to support the implementation of the corporate strategy and achieve the vision set out in the strategy. The projects that support the corporate strategy, vision, can be derived from the strategic objectives. For example, the role of maintenance projects is just as prominent as the research and development, production, procurement, or sales projects. The joint successful implementation of all of these projects results in the fulfilment of strategic goals. (Kessler & Winkelhofer, 1997)

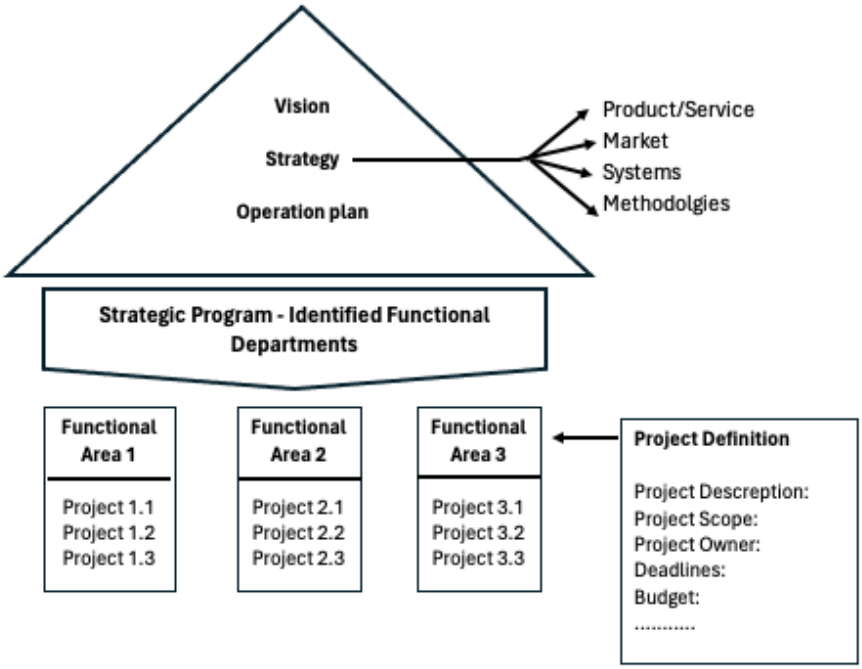

Figure 4: Corporate and Project Strategy connection
(Kessler & Winkelhofer, 1997, p. 62.)

At the organizational level to set up the strategic goals and create the strategic plan, the first and perhaps most important step is defining the organization's vision, what the company would like to achieve, where the company wants to be in the future and

what is the desired future state of the organization. After setting up the vision, a situation analysis and assessing the current state of the organization are the next logical steps – to determine where the company is now. The organization's strategic goals are formed by comparing the desired state with the current state. The most general outline of the strategic goals is the mission. The mission is a guiding principle that forms the core of the organizational strategy and a motivation for leaders, managers and every employee. The organizational goals are formulated more specifically than the mission and these goals are the central element of organizational management. (Barakonyi & Lorange, 1993) When formulating organizational goals, it is necessary to strive for quantification. The path to the goals is built as a series of strategic programs and the strategic programs are broken down into specific, shorter operational programs, projects.

The organizational strategy and these strategic objectives and programs may refer to different areas: products and services, markets or market segments, introduce of different systems, and the introduce and/or apply of specific methods and procedures.

Analysis of the strategic position of the product or service is most often determined by the product/service life curve - the analysis of the external environment, competitors, price analysis, and the analysis of the distribution channels. Based on these analyses, we can decide on the development of new products/product families and services, the further development of certain products or services, and the termination of certain products or services. More than one project can be generated from these analyses. The development of a new product line always requires technical-technological changes. In some cases, it may even result in a complete change of the production technology. Due to such indirect effects, it is extremely important that the managers of production, maintenance and sales are also involved in the strategic decisions, related to the new or further development or termination of a product or service. The introduction of the new

product line can therefore also be involved in the launch of the production technology, maintenance and sales projects.

Analysing the cost structure of competitors can also contribute to whether, for example, when introducing a new product to a given market, we follow the strategy of penetration at a low price, or to the higher market price of our product, we assign a differentiation (additional service, higher quality, longer service life). Individual fields of expertise are indirectly influenced by these strategies. Better quality or persistently high, continuous demand require error-free operation of production systems. All this may lead to initiation of new technology development, maintenance, or quality projects. The strategic objectives may not only apply to products, services or market areas, but also to introducing different systems. Such corporate implementation can be certain production systems (lean production, Kanban system), quality systems (ISO standard systems, TQM - Total Quality Management), IT systems (integrated company management systems, e.g. SAP), maintenance systems (TPM - Total Productive Maintenance).

The strategic objectives and programs can be aimed at introducing new methods and procedures in the company, as well as further developing existing methods. Such new methods can be, for example, different procurement, production and sales procedures. The introduction of these methods can only be realized with the active involvement of the managers of the relevant fields. The strategic objectives formulated in these areas can, of course, also be mapped into operational plans. However, introducing a new product to the market and the company’s introducing a new maintenance system is of great importance to the company's success. It is therefore advisable to give priority to these strategically important target areas. In these areas, we can implement the strategic goals as a series of projects. We need to align the project goals with the strategic goals.

We can talk about the success of the organizational strategy based on the combined results of the successfully implemented projects in the given target area.

But who is this person, who prepares the project plan, the actual versus plan analysis and presents the report to the stakeholders? Who clearly keeps the project scope or quality on the radar and tries to manage everything and handle the conflicts? And what is this person's position within the project? This person is the Project Manager and the action he or she does, is to manage and lead the project.

2.4 Project management

Based on the definitions in the previous chapter, a project has a clear set goal with defined participants, and as a result, the project members must be coordinated, communicate effectively, and the course of the project must be organized according to the pre-defined set of conditions. A project must be managed and led well to achieve the required outcome, and the conditions to maximise the chance of project success must be ensured.

Weiss and Wysocki expand the definition of project management by defining it as a method and set of techniques based on the accepted principles of management used for planning, estimating, and tracking the different steps and milestones in the project plan to achieve a pre-defined end result on time, within budget and to meet the expected scope or quality. (Weiss & Wysocki, 1992)

According to diverse Hungarian researchers, project management is an independent discipline, the purpose of which, included in a unified system and integrated, is to help the effective and complete realization of the project's goal, from the presence of

the problem, finding the solution, through the implementation, up to the realization. (Gaál & Szabó, 2002), (Papp, 1997), (Papp, 2001)

According to Görög project management is an activity "that on the one hand, focuses on resources, while on the other hand focuses on information, as well as the available methodological and technical tools, on achieving the defined goal." (Görög, 1999, p. 18)

The Project Management Body of Knowledge - PMBOK puts the definition of project management this way: "Project management is the application of knowledge, skills, tools and techniques during the implementation of the project's activities with the goal of fulfilling the project's requirements. It is realized by applying and integrating project management processes – namely: initiation, planning, execution, follow-up and control - as well as closing." (PMBOK, 2000, p. 6)

Considering the definitions and approaches mentioned, it can be said that project management:

- Is a complex system,
- Includes various resources in a single, total system,
- Delivers a solution to a problem,
- Focuses on achieving the goal.

Based on the literature, the theoretical definition of each project is similar. That is planning, implementation, and the final result section, after which the project ends and the project team is disbanded. Once the decision to implement is made then the planning section is the most important milestone in the process.

Based on my experience, the following points are necessary to be determined during planning:

WHAT – i.e. the goal of the project, what we want to achieve, introduce;

WHO – i.e. with which contractor, which project manager;

HOW – logical planning of the project, definition of execution, critical tasks (milestones);

WHEN – definition of duration and start/end date, critical dates (milestones);

WHEREAS – resource planning (human, material, technology, etc.);

HOW MUCH – cost determination (plan, max. reserve).

The project management definitions and my practical experiences are illustrated by the 5-phase project management life cycle model developed by Weiss and Wysocky. They divided the project life cycle into 5 main phases and every phase has 5 steps, counting altogether 25 steps over the 5 phases - from the definition of the project till the closing, through the planning and the execution phasis of project management. (Weiss & Wysocki, 1992)

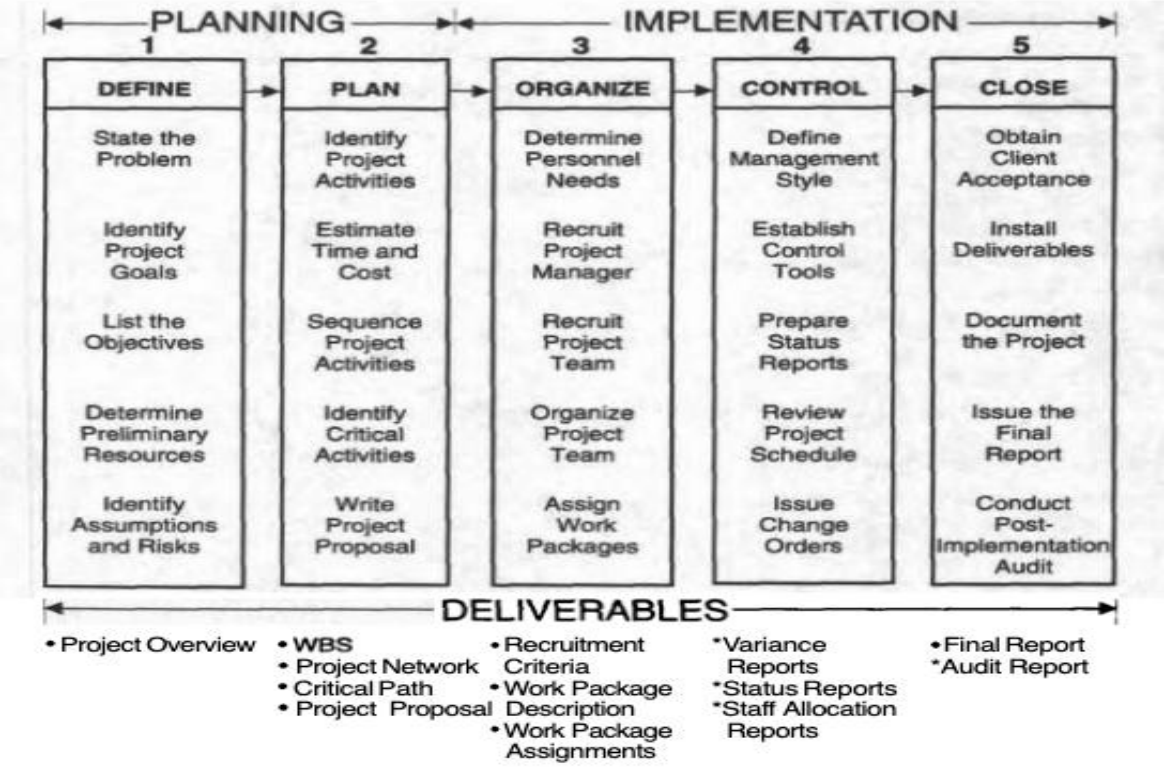

Figure 5: 5-phase life cycle model of the project management
(Weiss and Wysocky, 1992, p. 5.)

The model of Weiss and Wysocky clearly illustrates that the change between the individual stages and sub-processes does not happen suddenly but is realized continuously, building on each other. That is why it is important to have a clear project objective at the beginning, which is also part of a process in which a project starts with a proposal, then discussed in the "go/no go" section, and finally the fate of the project is decided. (Weiss & Wysocki, 1992)

Along the same theoretical principle (planning, implementation, then final result, after which the project ends and the project team disbands), according to the approach of Takács, the project consists of the following stages. (Takács, 2007)

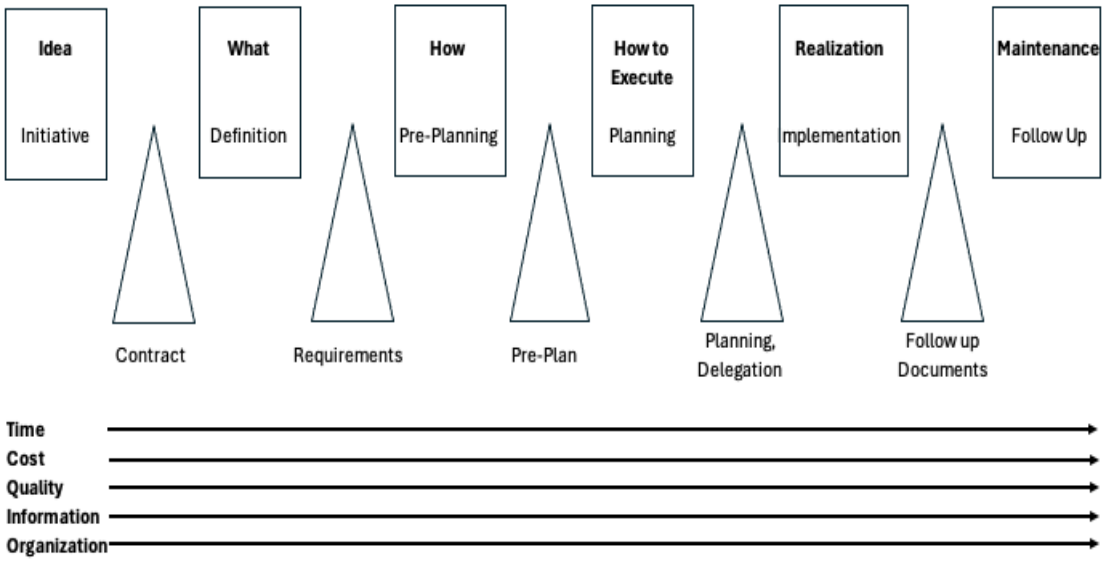

Figure 6: Project Management from start till the end
(Takács, 2007, p. 18.)

Papp divided the project life cycle into the following phases, in contrast to Weiss and Wysocky, but consistent with the 5-phase Weiss and Wysocky model. (Papp, 1997)

- Definition phase – definition of the goal;
- Planning-preparation phase – tasks before starting (planning, selection of members, signing a contract);
- Implementation phase – implementation and control of the project;
- Closing-evaluation phase – handover-acceptance, project closure, analyses/evaluations.

Project ideas and goals to be achieved are born due to various influences, initiatives, environmental, or corporate changes. The project goal and outcome must be formulated and precisely defined. After that, the "how" question can be asked and answered: how to achieve this goal. During the planning period, we see the project both spatially and temporally, i.e. which areas are connected, when it is necessary for them to

participate in the project, and which members' expertise we need. However, in the implementation phase, we are already dividing the project into parts. Not all areas need to be available all the time, it is enough to contact them at the right time. However, they must be notified in advance of the planned involvement. In the phases of the implementation, it is advisable to mark the main achievement points as "milestones". In connection with these, decision points can also be created. The issues of time, cost and quality always arise repeatedly as a result of unforeseen problems or departmental conflicts that may arise during the project. Therefore, a well-structured project team with an appropriate project manager is vital for a successful implementation. (Takács, 2007)

In summary, we can state that the role of the project manager is extremely complex and important. While the project manager's role is not more important than anyone else's role, the project manager's personality also determines the behaviour, added value, motivation and performance of the other project members.

2.5 Life cycle of projects

The lifecycle of projects shows us how we get optimal results from project idea to closing of the project. The life cycle guides us through the entire flow and progress of the project, including the individual stages of the project as well as the activities occurring during each stage. However, no method can be found in the literature that could be used to determine the ideal lifecycle of a project.

Cleland and Ireland, Adams and Brandt distinguish four consecutive phases of the project cycle. The first phase, the concept phase, includes the definition of the need, the examination of feasibility, the development of alternatives and the formulation of the proposed solution, as well as the compilation of the project plans and the project team. The second, the planning phase, includes the detailed planning of the project progress and

the project flow, the detailed tasks, timeline, milestones and departments, which is followed by the execution phase with the creation of the project outcome, including the testing and “go-live”. After the execution of the project, in the completion stage, commissioning, training, handover to business users and the evaluation of the project, the closure of the project team takes place. Although, Cleland's model describes the entire process of the project well, it does not show its connection and harmony with the initial objectives of the project and the company's strategic ideas. (Cleland & Ireland, 2002) (Adams & Brandt, 1983)

This strategic approach is shown in the general project cycle model of Görög, where the center of the project cycle is the organizational strategy, emphasizing that the long-term success of organizations depends on the completion of the projects that support achievement of strategic goals. (Görög, 2003) The four phases of the strategy-oriented project cycle are marked-off by so-called critical decision points, which are significant in the project process and the relationship between the process and the strategy. The strategy-oriented project cycle divides the project process into four main phases, such as project setup (initiation), contract awarding (tender), project fulfilment (execution), and post-analysis. The phases are separated by three critical decision points, "while the cycle starts with the strategy in the first phase and returns there in the last phase." (Görög, 2003, p. 66)

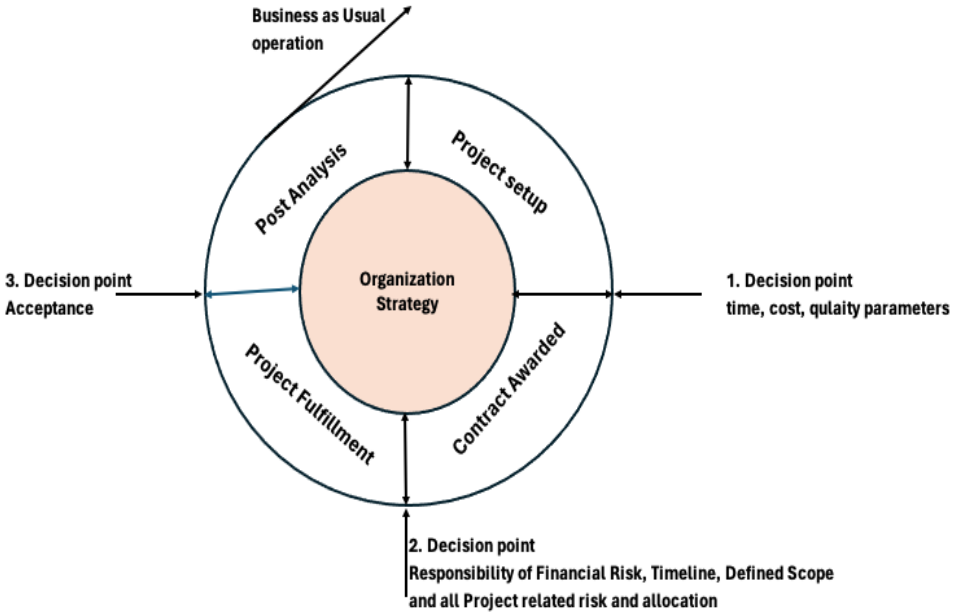

Figure 7: General project cycle model
(Görög, 2003, p. 65.)

In contrast to the other project lifecycle theories and in addition to presenting the activity process, this model is also suitable for highlighting the strategic determination, the relationship of the implementation process as a whole and the fulfilment of the strategic goals. An important element in the model is the appearance of the decision points. In addition to their task of delimiting and closing the given phase (milestone), one of the project manager roles is to record the progress of the project. Achieving milestones and their completion requires acceptance of the result of the given tasks by business or dedicated project team member. The elements of the model listed above suggest an approach that prioritizes the role of continuous monitoring and feedback during the cycle. (Görög, 2003)

In the Project Setup (initiation) phase, the strategic determination of the activities is still recognizable since the projects are designed around the organizational strategy. In

this stage, the variant of the content is prepared, and the scope of the project is defined by creating feasibility studies, based on which we can make a well-founded decision about the best alternative to implement. In the case of well-quantifiable tasks, these activities can be carried out precisely, while in the case of less or barely quantifiable projects, they are more difficult to control and complete. At the same time, feasibility studies can map the effects that arise later on and can help a lot in the quantification of the tasks and also can help to create a more precise definition of the project version to be implemented. At the end of the phase, we have to decide which available and useful solution, or version we want to implement during the project.

During the Contract Award (tender) process - if we plan to use external contributors - we develop the project implementation strategy and conduct the bid, the evaluation and the conclusion of the contract. As a result of the decision point that closes this stage, a system of sharing responsibility for the project, the duration and the costs of its execution, as well as the allocation of project related risks are also clarified and formed. Similar to the previous section, less accurately determined or less quantifiable project results can cause the tasks of the awarding phase to underperform and accordingly. Therefore, it is necessary to compare these tasks with the expectations of the corporate strategy before making a decision. In this stage, the necessary resources for project performance are engaged, and this performance can have legally enforceable consequences written in the contract in the case of external projects. But before we step into the "legal minefield", if necessary, the project can be modified or cancelled with relatively smaller losses before the different external contracts are signed. (Görög, 2003, p. 67)

In the Project Fulfilment (execution) phase, the processed activities are corresponding to the content of the accepted project plan and continuous monitoring of

the implementation is also in place. In this phase, the importance of the comparing with the strategy is higher, especially in the case of less quantifiable projects. The project implementation contains many branching possibilities, which create decision situations during the project lifecycle. In such situations, the harmony between the project result and the organizational strategy can only be realized if the branching possibilities are compared with the strategic goals before the decision is made. In the absence of this, the external contractors usually make decisions in their own interests. At the end of the phase, we need to decide whether to accept or reject the phase's result.

During the last stage of the project cycle, in the Post-analysis phase, on one hand the entire project process is evaluated for the purpose of recording experiences and supporting the learning process of project management and later projects (lesson learned). On the other hand, the project's success is evaluated, "depending on the nature of the strategic goals and the behavior of the groups involved in the project" (Görög, 2003, p. 68) Project's success can sometimes be determined in a very short time, while in other cases it can be done only after a long time and less reliably. Thus, in the last phase, the lifecycle returns to the organizational strategy that forms the starting point of the project.

Based primarily on German project literature and project experiences, Corsten compiled the project management lifecycle system, which also prioritizes implementation in accordance with the organizational strategy. (Corsten, 2000)

In Corsten's lifecycle model, compared to the previously presented model of Cleland and Görög, a significant difference is, the project initiation is preceded by the preparation phase, which ends with a decision to implement or reject the project initiative based on preliminary studies. The outcome of this preparation phase is a detailed technical, economic and social analysis of the alternatives regarding the feasibility of the

project idea; analysis of partners and the project environment; as well as the organization's self-evaluation. During this phase, a detailed analysis of the emerging risks and a pre-calculation of the expected expenses and income (if there are any) are also prepared.

After the positive decision, the project definition phase can take place, where the objectives are specified, the subject, the timeframe and the stakeholders of the project are defined. During the next phase, in the project planning phase, the base principles of the project and the implementation are laid down: defining the project goal, planning and defining the project organization, creating the activity structure, planning the execution tasks, calculating the deadline and the cost, estimating the required resource, as well as a detailed and complete risk analysis.

During the project implementation, the project plan is fulfilled and the configuration management tools can be used to manage the changes that arise. Project control takes place in parallel with the implementation process, the purpose of which is to monitor and compare the execution of the different implementation tasks and their timeframe in accordance with the project plan. This activity also helps to reveal emerging problems and to eliminate future errors. The implementation phase is followed by the end of the project, preparing or finishing different project documentation, which ensures that all necessary data and information, including all project status reports are collected and made available in an appropriate form and place. The different project documentation, by summarizing the main data and experiences of the project, can form the basis of the learning process, i.e. lessons learned in the project.

Schelle has a similar but slightly different conception. He says that the different activities that take place from project initiation to project closure are accompanied by two

processes in parallel: 1) project controlling and 2) quality management phases. The purpose of the project controlling is to ensure coordination between the activities, to provide information and to prepare decisions. The main task of the quality management is to ensure that, throughout the entire lifecycle of the project, a quality result will be created that will meet the customer's needs or is accepted by the market. (Schelle, 2004)

The table below presents a summary of the discussed project life cycles and a comparison of the individual phases.

<table>
<tr><th>Cleland (1983)</th><th>Görög (2003)</th><th colspan="3">Corsten (2000)</th></tr>
<tr><td></td><td></td><td>Preparation</td><td rowspan="6">Project Controlling</td><td rowspan="6">Quality Management</td></tr>
<tr><td>Concept</td><td>Project Setup</td><td>Project definition</td></tr>
<tr><td>Planning</td><td>Contract Awarded</td><td>Project Planning</td></tr>
<tr><td rowspan="2">Fulfilment</td><td rowspan="2">Project Fulfilment</td><td>Project execution</td></tr>
<tr><td>Project Control</td></tr>
<tr><td>Completion</td><td>Post analysis</td><td>Project Documentation</td></tr>
</table>

Table 2: Comparison of Project life cycle models
(own compilation**)**
(Based on Cleland 1983, Görög 2003, Corsten 2000)

Among the presented project lifecycles, the life cycle model of Görög and Corsten uses a strategy-oriented approach, while this does not appear in Cleland's model. Regarding the project phases, compared to Cleland's model, Görög emphasizes the importance of the project implementation strategy and the post-analysis and ensures the continuous comparison with the organizational strategy through the decision points delimiting the phases. In his lifecycle, Corsten goes into more detail about the preparation

phase, which ends with the decision to start the project, and highlights the importance of two parallel phases, such as project controlling and quality management, which accompany the entire project lifecycle and support coordination, information provision and the fulfilment of the expected quality standards. In addition to the above-discussed project life cycles, Madauss focuses mainly on research and development project lifecycles and presents different project lifecycles, such as the systems developed by NASA. (Madauss, 2000)

For evaluating the quality of the project work Corsten declares the “Project Excellence model”, developed by the German Project Management Association based on the EFQM (European Foundation for Quality Management) Excellence model to be a suitable tool. (Corsten, 2000)

2.6 Guidelines and goals in project management

Regardless of an organization's structure, company culture, or the diversity of its employees, the goal and objective settings are typically regarded as crucial management instruments within the creation of the corporate strategy. This applies equally to the project teams and also to the entire organization. Within this topic, I will present and explain some of the complexities and uncertainties associated with managing goals. In order to effectively clarify and execute the team's mission, it is important to consider the diverse (and often conflicting) goals that team goals can represent.

We also need to keep in front of us the challenges that come with objectives - such as the necessity to establish a distinct, quantifiable structure while remaining adaptable and modifiable in response to shifting conditions. Objectives also need to keep a balance between offering challenge and motivation to the team and offering support and

help when an action results in error. Goals and objectives should create opportunities for personal and group growth while still supporting the achievement of the organizational goals.

It is not realistic to always have clearly defined goals. Different factors, such as social, economic, and political influences, can lead to sudden changes or constant pressure on an organization to always be ready for change. Team objectives should serve as a rock-solid foundation for team activities, but some significant external impacts and modification requests can destabilize this foundation. Changes in the organizational tactics and customer demands can also introduce uncertainty. Even the methods used by teams are not immune to change and unpredictability. Technological advancements are drastically reshaping the ways a team can achieve their goals. All organizations are either leading a change, being influenced by a change, or, worst-case scenario, missing a change and falling behind a competitor. As the ancient Greek philosopher Heraclitus stated, 'Everything is in a state of flux'—and the pace of change has been particularly shifted in recent years. It can be quite challenging for teams to establish and follow clear objectives when they are continuously being impacted by external changes.

To separate goals and objectives can sometimes be challenging. Goals are often tied to an organization's strategy and represent a long-term direction for the team. Objectives, on the other hand, serve to break down these goals into specific, achievable, and measurable parts. These objectives guide the implementation of strategic goals. A similar problem arises at the intersection between team goals and the detailed planning of the activities required to complete the tasks and achieve a goal. In a dynamic organization, employees and managers need to evolve beyond a rigid approach of setting goals and defining tasks. They need to adapt to a more flexible operating model, considering a broad range of goals within various teams and purposes.

When setting team goals, it is crucial to recognize that team goals mediate between organizational goals and individual goals. It is important to remember that all team members have their own goals and hidden agendas. Therefore, team members may agree or disagree with the team goals for various reasons. They may need the job for financial stability or use the team as a stepping-stone to advance their career. Hence, goals carry a significant political aspect, and managing potential conflicts between team goals and individual goals is a critical aspect of teamwork. Team leaders and advocates should be mindful of the concerns and individual goals of less enthusiastic members. For team effectiveness, it is essential that the goals need to be achievable, open to evaluation, and understood by team members and their sponsors, whether they are internal employees or external contractors to the organization.

Another strategy to help teams to achieve their objectives is to give more autonomy to the teams. This means that the organization specifies the desired outcomes and resources, while teams have the freedom to decide how to delegate tasks and responsibilities.

There's a wide range of forms of flexible teamwork. At one end of the spectrum, there are traditional teams with a team leader or project manager who consults with the team about how to accomplish a task. At the other end, there are self-directed or self-managed teams, where 'everyone is a manager', and they operate with a high level of internal and external autonomy.

From Greiner perspective, in the project preparation (definition) phase, all project management activities should be aimed at defining project goals. During the design, implementation and commissioning stages, all activities must be aimed at achieving the

project goals. This is also conveyed by the diagram below, which contains project management guidelines. (Greiner, 2002)

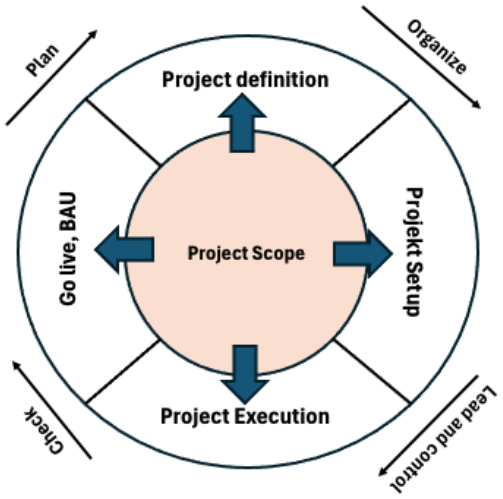

Figure 8: Project management guidelines
(own compilation)
(Based on Greiner, 2002)

Based on the above figure, the project management tasks can be formulated in three categories:

- Main tasks: goal setting, planning, organization, management, coordination, control;
- Support tasks: administration, information, communication, documentation;
- Additional tasks: ad hoc reports and analysis.

Without formulating and recording goals, we would only be able to perform tasks instinctively. It should be noted that the goals are to be examined from several points of view, so for example, there are quantitative and qualitative goals and there are goal priorities, and the priorities must be considered in order to avoid any conflicts during the project.

How Greiner defined them, the below diagram clearly shows the basic project goals and the questions related to them. (Greiner, 2002)

Figure 9: Project management Goals
(own compilation)
(Based on Greiner, 2002)

How important it is to know and take into account the goals—and it's not just about the primary project goals—is shown by the following construction specialized diagram created by Takács. With a little modification it can be implemented to other types of projects. Takács's model is remarkable because it shows the entire project implementation and tries to show the time phases related to the various goals and more important tasks and also includes the main documentation of each project phase. (Takács, 2007)

As the table shows below, there are tasks related to the goals in every project phase, so project management and control are not only limited to the implementation phase. In the case of goals, it can generally be stated that they are defined by the builder and the project management and continuous monitoring of the achievement of goals and the fulfillment of the expected results is necessary. (Takács, 2007)

Initiation, Definition phase	***Analysis Phase***	***Preparation of realization (pre-planning)***	***Planning, Preparation of Execution***	***Execution Phase***	***Operation, Sign off***	***BAU***
Shaping, formation	*Structure*		*Realization*			*Usage*
Quantitative goals	*Internal External functions*	*High level plan*	*Licenses*	*Construction planning*	*Designer Set*	*Inventory records*
Qualitative goals	*Quality limits*	*Facility requirements*	*Building requirements*	*Construction descriptions*	*Equipment Docs*	*Inventory Docs*
Financial goals	*Financial limits*	*Budget Calculation*	*Cost calculation, execution price*	*Detailed Financials*	*Agreed Financials*	*Running costs*
Timeline goals	*Timeline limits*	*High level timeline*	*Re-defined timeline*	*Detailed timeline*	*Operation timeline*	*Operation running plan*
Documentation	*Pre-feasibility study*	*Feasibility study*	*Tender*	*Detailed plan*	*User Manuals, registers*	

Table 3: Project management system in construction
(Takács, 2007, p. 21)

2.7 Organizational structures of projects

As can be read from the definitions in earlier chapters, the project is a periodic, temporary activity. Because of the periodicity, not every company has the luxury and opportunity to create a dedicated department with project professionals and specialists within the company that is permanently available to deliver any project. The members of the project can be permanent, but usually the project manager connects the projects. The majority of the project members are different due to the differentiation of the projects.

Based on my experience so far, the implementation of the project is a delicate and complex collaboration within an organization. We need to find the balance of the project members' workloads because projects are usually carried out by project members in addition to their daily routine. The consequence of this is, first-hand, a possible conflict between the project manager and the "business as usual" manager. On the other hand, employees can receive instructions from the project manager, who is temporarily appointed above them in the organizational hierarchy, while on the other side, project members can also get instructions from their "normal line" supervisors, who are their superiors in the usual organizational form, before and after a project arises. Therefore, it can easily happen that an employee, who is a project member also, can receive (even contradictory) instructions from at least two superior managers (e.g., which can occur in a matrix organization). This might be a serious source of conflict within the organizations or within the project, and to prevent or resolve such conflict, the support of the senior management may be needed and major component during the project lifecycle.

The organization of the project has a great influence on whether it is created only within the given company or whether it unites several organizations. (Szabó, 2012) In my Doctorate dissertation, I examine the success of a project within different Australian organizations, so the different organizational structures within the company are presented. The literature distinguishes between coordination-oriented, function-oriented, matrix- and project-oriented project structures. (Görög, 2003), (Görög & Ternyik, 2001), (Kuster, et al., 2006), (Szigethy, 2008), (Szabó, 2012)

2.7.1 Coordination-oriented project structure

Workers with similar or related tasks are not "highlighted", they remain in an organizational group, and their leader is the functional leader according to the daily

routine. The task of the project manager is limited to the consultation with the functional leaders. The project manager assigns tasks and checks their completion with the functional leaders. The task of the project manager is to primarily to administer the status of the tasks, and to lead and direct communication. The project manager does not make decisions and has no significant influence on decisions. (Görög, 2003), (Kuster, et al., 2006), (Szabó, 2012)

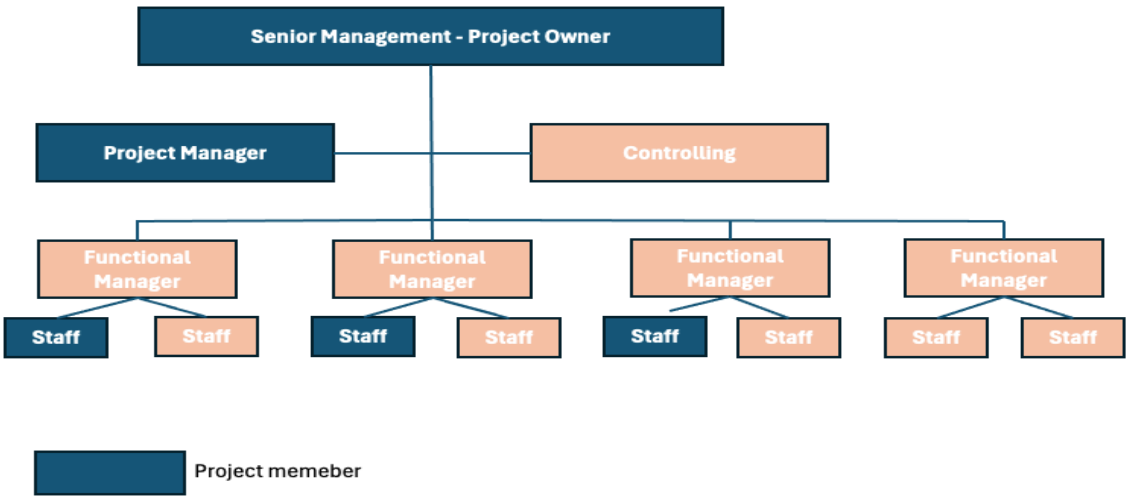

Figure 10: Coordination-oriented project structure
(Szigethy, 2008, p. 2)

2.7.2 Function-oriented project structure

The selected workforce, who is participating in the project, is not "highlighted," they remain in the same organizational group, as the project team is organized within the given organizational unit. The task of the project manager is limited to the consultation with the functional leader and the project members. The project manager assigns tasks and checks their completion with the functional leaders. The main responsibility of the project manager is primarily to monitor the status of the different tasks; it is exhausted in its administration; ensure and manage communication. The project manager makes

decisions only within the framework of the project and the project manager is at the mercy of the organizational functional manager. (Szabó, 2012)

2.7.3 Matrix project structure

Workforces with similar or related tasks are "highlighted" in such a way that they remain in the organizational group but are also delegated “under” the project manager. In addition to the functional leader according to the daily routine, their leader will also be the project manager. Members are assigned to the project from different areas. The project manager assigns and controls tasks (as opposed to the functional organization, where functional leaders have control), administers, ensures communication, directs and has specific decision-making authority and regularly reports to the program/project leaders and stakeholders (e.g., project sponsor, customer). (Görög & Ternyik, 2001), (Szigethy, 2008)

In addition to the daily work of the matrix organization, the project members carry out the project work under the horizontal coordination of the project manager and the vertical coordination of the functional leader. (Gaál & Szabó, 2003)

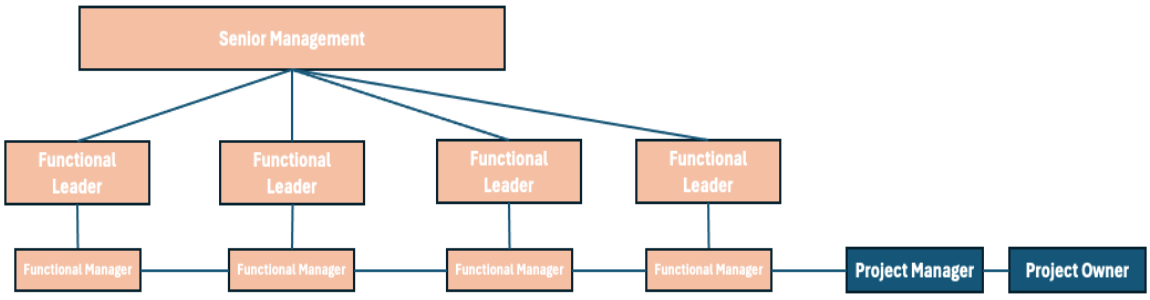

Figure 11: Matrix project structure
(Szigethy, 2008, p. 3)

2.7.4 Project-oriented project structure

Project members from the organization are assigned directly to the project, forming a new, independent organizational unit. As a result, the necessary theoretical and practical knowledge is gathered in one place, within one team. The project members report only to the project manager, and the project manager regularly reports to the program/project leaders and stakeholders (e.g., project sponsor, customer). The manager of the new organizational unit is the project manager, who is suitable, has the authority and almost complete decision-making power regarding the time-cost-resource framework, as well as the appropriate authority to assume the responsibility necessary for the completion of the project. (Gaál & Szabó, 2003) (Görög, 2013)

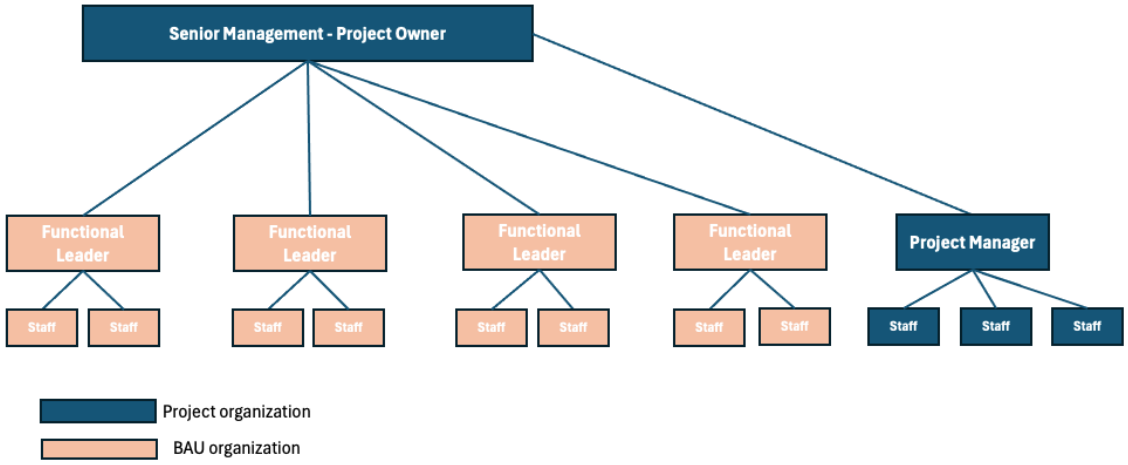

Figure 12: Project-oriented project structure
(Szigethy, 2008, p. 6)

The above figure (compared with the functional and matrix organization) clearly shows that the project manager is directly assigned to the top management. In terms of hierarchical level, the project manager is on the same level as the managers of the various functional units. Since the project manager has direct subordinates, he/she has direct and large-scale command and control authority, but only with regards to the preparation or the execution of the project. (Görög, 2003) (Görög, 2013)

The advantages of implementing the project-oriented organizational structure are (Gaál & Szabó, 2003), (Görög, 2003), (Pfetzing & Rohde, 2001):

- Emphasizes the importance of the project at the company level, provides a direct connection with the top management and strengthens the connection between the strategic goals and the project goals.
- The responsibility and powers of the project manager are covered, thereby ensuring the ability to influence the fulfilment of the results.
- It integrates the necessary resources into a single organizational unit and focuses on the performance of the given task, avoiding losses resulting from division.
- Due to the specific competences, the information flow between the members of the project team is fast and direct, which improves the reaction and decision-making of the project organization.
- It supports and encourages quick response and action to market demands and changes. (Pinto, 2007)

In addition to its advantages, project-oriented organizational form also has many disadvantages (Gaál & Szabó, 2003), (Görög, 2003), (Pfetzing & Rohde, 2001):

- Forming a project team involves higher costs and creates conflicts between the project manager and the functional managers.
- It is difficult to develop identification with the project, the commitment and the effective teamwork within the framework of an organization whose number and composition often change.

- After the completion of the project, the project team is terminated, so the problem of the members returning to their original activity and the further utilization of the accumulated knowledge is not ensured.
- Completing the project does not mean a full workload for all members, thus reducing the use of capacities, which ensures an increase in costs.
- In an event of a conflict, the interests of the organization or the project may overshadow the functional requirements.

In practice, the presented project organizational forms are used by organizations according to their relative suitability and appropriateness. However, during the practical implementation of the different structures, we can see examples of combining project organizational forms, where several structures of different types can be found at the same time, located at different levels.

2.7.5 Comparison of organizational forms

Like all organizations, different project organizations have their advantages and disadvantages, which help or hold back a project during its implementation. (Görög, 2003), (Görög, 2013), (Görög & Ternyik, 2001), (Kuster, et al., 2006), (Szigethy, 2008), (Szabó, 2012)

Project Organization	***Location***	***Advantages***	***Disadvantages***
Coordination oriented	*Built into an existing corporate structure*	*- Effective information flow within the area* *- Easier management of project members* *- One leader* *- Effective resource usage*	*- Difficult information flow between areas* *- The project manager has no decision-making authority* *- Project goals are in the background*

Function oriented	*Within existing department*	*- Project members are well coordinated - At the end of the project a members can "return" to their original job - in addition to daily work was carried out - Expertise is a resource immediately available stands*	*- There is no project manager decision-making authority, "depends on" the functional manager - Support from other departments is low - Only one department is impacted by the project - Management's support is not perceptible*
Matrix	*Built into an existing corporate structure*	*- Appropriate communication between areas - Easier to manage the project members, - At the end of the project all member is back to their original role - Project is besides their BAU work*	*- More leaders - More administration - Conflicts between managers (work prioritization) - Conflicts between areas (solution opportunities)*
Project oriented	*Separated organizational unit*	*- Effective project organization - One leader - Greater support - Project members are loyal - Effective information-flow within the new area - Effective knowledge usage - Effective response a to any environmental changes*	*- At the end of the project Members cannot go back to their original role, they need to find a new project, and this can cause an organizational confusion - Higher costs for the design - Wasteful resource usage, project members' workload/participation is different - Conflicts between project organization and the business/organizational leaders*

Table 4: Summary of project organizations
(own compilation)
(Based on Görög & Ternyik, 2001, Görög, 2003, Görög, 2013, Kuster et al. 2006, Szigethy, 2008; Szabó, 2012)

Based on my personal experience, the project manager and the project supervisor are mainly responsible for the organization of the project and the selection of the expert members.

When setting up the team, they need to remember always that those people, who will be chosen, will be the members of the project team:

- They should be the most suitable professionally, and should be able to identify with the expected result, goal, and requirements of the project;
- They should be able to work as a group, characterized by cohesion and problem solving, not uniqueness or separation;
- They should not be decisive quantitatively but qualitatively, i.e., the number of project members should not hold back the operative work, should not increase administration or loosing information;
- They are all from relevant areas, management of the affected areas inclusively should be represented and the appropriate quality and quantity of information should be available to everyone, anytime in the project management;
- They form an appropriate organizational structure to meet the project's goals, keeping in mind the corporate culture and the organizational structure.

Among the presented project organization forms, the functional organization is the least suitable in terms of impact on results, since in this case the project manager has no influence on decisions, while in the project-oriented organization has full decision-making authority. The project-oriented organization requires the biggest organizational change, since in this case the project members are "separated" from their original job, while in the case of the functional and matrix organization, they remain in their original, hierarchical place, even in the uncomfortable situation instructed by the two managers. All organizational form has its advantages and disadvantages. Therefore the selection and formation of the appropriate project organization has a great influence both on the

performance of the company and on the execution and the successful implementation of the project. (Görög, 2003), (Görög, 2013), (Görög & Ternyik, 2001) (Kuster, et al., 2006), (Szigethy, 2008), (Szabó, 2012)

Of course, the project's corporate and organizational structure, scope, and operational function are largely determined by the project goal. In other words, the same organizational structure is not suitable for a construction or an IT project. As many different project areas exist, therefore many organizational structures and many project management styles and methods can be used for a project's execution.

2.8 Human resource management during a project

In a project, the concept of assets includes all human and material assets, in other words, units that have limited use, have cost effect, or perform project work. Project resource management includes all processes used to identify, acquire, and manage necessary resources for the successful completion of a project. These processes help ensure that the right resources are available to the project manager and project team at the right time and place. (PMBOK, 2006)

As Boris stated and presented in the below figure, the project managers have to perform their human resource coordination tasks in the midst of a very complicated system of relationships. (Boris, 1995)

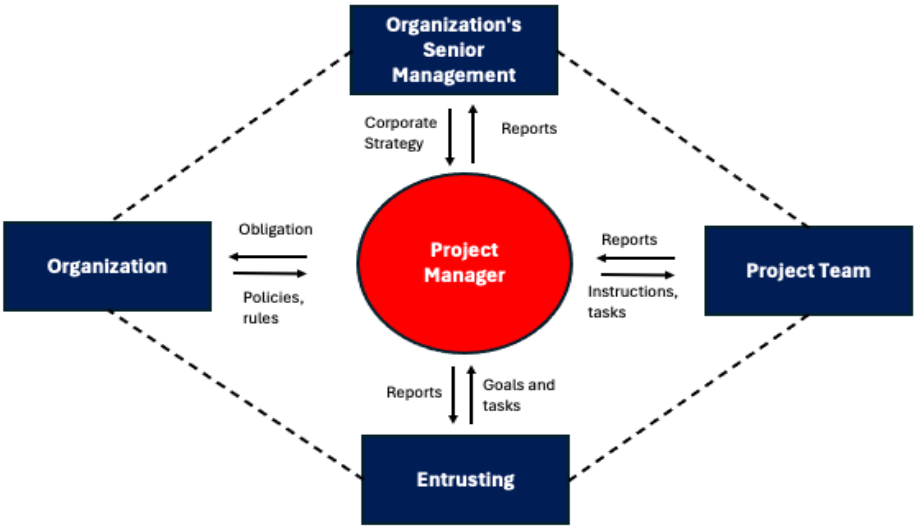

Figure 13: Project manager's networks
(Boris, 1995, p. 15)

The project manager is responsible for the client complying with the prescribed goals and boundary conditions. In the reports prepared for the company management, the project manager needs to report the project status, results that support the company's strategic goals. Also, the project manager's commitment to the corporate organization means that the project team, as a temporary organizational unit, is integrated into the existing organizational structure in such a way that it does not jeopardize the continuity of the execution of operational activities. Finally, the project manager owes the project team the responsibilities expected of a manager.

The manager, at the head of the project has an extremely versatile role. The explanation for this is not only to be found in the fact that a project may become very complex and complicated, but primarily lies in the fact that the project manager needs to take full responsibility for the success of the project. The organization, function, person, and interaction-oriented roles that characterize the tasks of the project manager also prove that the manager, who is responsible for the successful execution of the project tasks,

needs to take an integrated approach so that all of the project manager's roles support one another. (Kessler & Winkelhofer, 1997)

Human resource management includes the tasks and processes of organizing and managing the project team in project execution. (PMBOK, 2006). The project team operates temporarily, i.e., it is created to achieve a given goal and disbands after the goal is fulfilled. (Verzuh, 2005) Since the project team itself will be responsible for fulfilling the tasks of the project, it is extremely important that human resource management, i.e., the planning, recruitment, development and management of the project team, is well thought out and grounded in the project's needs.

During human resource planning, the individual and group roles assumed in the project, the responsibilities and competencies need to be established and recorded in accordance with the characteristics of the project. A clear definition of the authorization level, level of responsibility and the boundary of the role is essential for effective work. Competence includes the necessary abilities and capacities to perform the activities, the adequacy of which is essential for the performance of the tasks. (PMBOK, 2006) During the planning activity, the organizational characteristics that limit the possibilities of forming a project team, need to be considered. The existing organizational structure, into which we want to integrate the project team, as well as the characteristics and interests of the relevant organizational units and specialist areas, need to be examined also. The system-oriented approach of the project management emphasizes that it is not advisable to link the project to a single functional area, as this results in the predominance of the given area of expertise, but the project should be assigned to a managerial organization that integrates the necessary functional areas. (Gaál & Szabó, 2002)

After the planning, the project team is assembled, that is, participants with the right skills and competencies to complete the project are selected. The project team members are selected by accounting for all available external and internal sources. During the selection, the availability, skills, experience, interest and cost need to be considered to ensure they are consistent with the project budget and the project goal perspective. In terms of abilities and competences, in addition to the necessary professional knowledge and experience, additional competences such as problem solving, teamwork, commitment, conflict management and continuous learning are essential requirements. During completion of the project, the members must cooperate, solve complex problems and learn to work together in order to fulfil their tasks. The appointment of members in many projects is carried out through negotiations, where the project manager needs to agree with the functional managers and other project managers to get the most suitable staff for the project, for the required time period and to perform the required tasks. When the required person for the project is not available within the organization, the required expertise needs to be hired externally. This can be done by hiring new employees or by involving other organizations as subcontractors. While the assimilation of the employees who are not permanent members of the organization is problematic at first, the new way of seeing and the experience they bring can help the team's work and the fulfilment of tasks. With regards to both internal and external contributors, it is important during the selection process to address the situation of the involved employees that we can or cannot provide them additional opportunities after the end of the project, and if so, in what form.

To develop the selected team members and ensure the best possible teamwork and cooperation, attention must be paid to developing the project team as a team and not just focusing on the individual’s development. (PMBOK, 2006) Improving the abilities of the

team members increases their ability to perform activities, while building trust and unity among the members contributes to better teamwork and more efficient work. When developing a project team, general leadership skills and the ability to manage interpersonal relationships can reduce conflicts and increase cooperation. Team-building activities increase team unity and play an important role in building trust and good working relationships. Its forms range from simpler group activities to professional trainings. Another means of team development can be the establishment and acceptance of behavioural standards, co-location, and the recognition and reward of high performance.

By managing the project team, the project manager monitors the team's performance, gives feedback, motivates the team and the team members as well, tries to lead the team to solve problems that have arisen, and coordinates changes implemented to improve the project performance. The members of the project team receive feedback on their work from the project manager and possibly from external participants. A project member receives feedback from several sources - given by his manager, colleagues and subordinates at the same level within the “360-degree” feedback method. Providing feedback is sometimes a lengthy process since it depends on the success of a single task or the entire project. Therefore, the project manager needs to be able to motivate the team during the whole execution. In addition to analysing the information related to the progress of the project, budget and milestones achieved, during the project it is advisable to encourage the efficient workers with recognition and rewards, thereby motivating them and the others for continuing high performance. (Slevin & Pinto, 2007)

The project manager needs to be able to manage and coordinate the work of the project team properly and successfully carry out the project, it is not enough to fulfil the technical tasks listed in the project plan. In addition to the financial and technical tasks

and skills related to the professional content of the project, a successful project manager also needs to have certain human-oriented and project-specific leadership skills. The project manager's human skills are helpful to contact with the organization's leaders and the project team members, while the project-specific leadership skills are manifested in the management and leadership of project completion. (Görög, 2003)

The required human skills in project management can be summarized in the following areas: (Gido & Clements, 1999) (Mantel, et al., 2001) (Görög, 2003)

- The leadership ability helps to deliver the expected project result with team members. This ability includes the ability to set goals, motivate, and use an appropriate leadership style.
- The team-building ability is aimed at creating a team that can cooperate, work together and complete the project.
- The ability to create relationships is essential in establishing and maintaining relationships with the project stakeholders (senior managers, external contributors, customers, etc.) over whom the project manager has no authority.
- With the help of the communication ability, it is possible to manage the project even without the formal authority since the project can be made acceptable to the stakeholders with the help of communication tools.
- The ability to negotiate can be an important skill. In order to secure the necessary resources for execution of the project, negotiations are held with the “owners” of the resources.
- The ability to manage conflicts plays an important part in being a project manager because handling and resolving different conflicts and situations that arises during the project life cycle has a significant impact on project delivery.

- The ability to solve problems helps the project manager to see the problem as a whole with all its consequences including its impact on the project. Therefore the project manager must be able to systematically focus on solving problems in a systematic way.

Based on Cleland's work, project-specific management skills can be divided into three components, such as knowledge, application skills and attitude. (Cleland, 1994)

- The level of knowledge expresses the project manager's knowledge of the tools of the project management toolbox.
- However, the use of this knowledge depends on the project manager's willingness to apply and use these skills.
- The attitude expresses the project manager's relationship to the projects and to the role of the projects in achieving the organizational strategic goals, beyond the framework of the given project.

In addition to the management skills of the project manager, the German literature has formulated more project manager roles and behavioural expectations, with the aim that the project manager, regardless of his/her individual characteristics, standardizes the ways of behaviour and ensures the project performance is regulated and undisturbed. Staehle classified and Winkelhofer displayed 24 identified project management roles into four groups, which are: organization-oriented roles, function-oriented roles, interaction-oriented roles and person-oriented roles. (Staehle, 1991), (Winkelhofer, 1997)

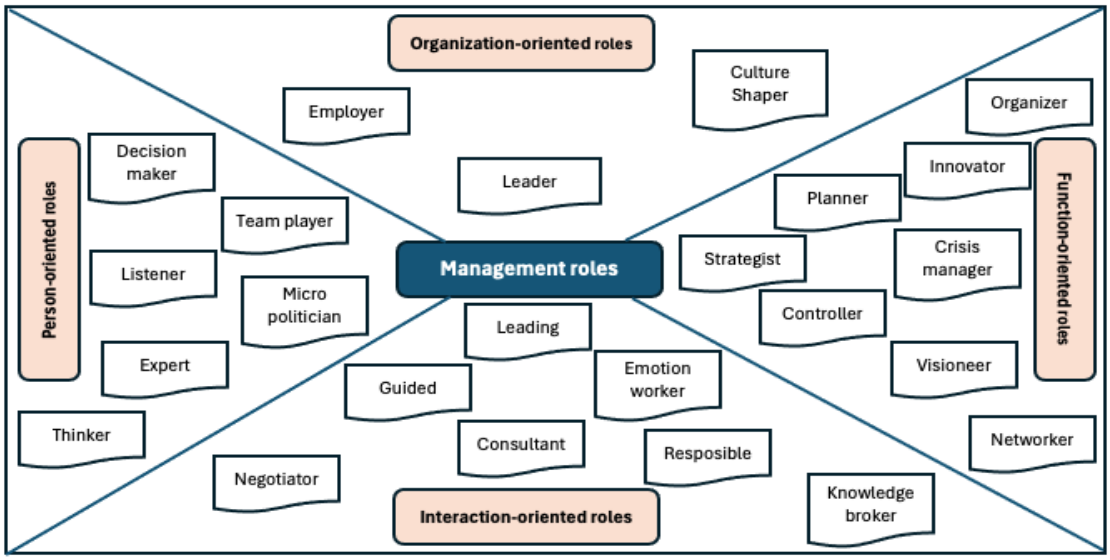

Figure 14: Project management roles
(Winkelhofer, 1997, p. 379)

Interpretation of the above figure by (Winkelhofer, 2005) (Gaál & Szabó, 2002)

Regarding the organization-oriented roles, the project manager acts

- as an employer, takes care of the legal and organizational conditions;
- as a leader, develops and exploits opportunities; while
- as a culture shaper, supports the expression of human needs.

In the function-oriented roles, the project manager acts

- as the leading strategist, responsible for shaping and implementing the strategy;
- as a planner, responsible for developing future plans;
- as an organizer, responsible for the necessary work to achieve the goals;
- as a controller, responsible for ensuring that plans are met; and
- as an innovator, responsible for bringing new products and procedures to life.

In the interaction-oriented roles, the project manager acts

- as a leader, sets an ideal;
- as a guide, reduces his/her influence on the project, project members;
- as a negotiator, resolves emerging conflicts;
- as a knowledge broker, transfers professional and experiential knowledge; and
- as a consultant or subject matter expert, provides advice.

In the person-oriented roles, the project manager acts

- as a decision-maker, by making and undertaking the right decision at the right time;
- as a micro-politician, looking for compromises;
- as an expert, through technical knowledge and ability to rationalize processes;
- as a thinker, developing new or modified theories, and
- as a listener, following the principle of lifelong learning.

Among the organization-oriented roles, in addition to the classic employer and managerial tasks, the project manager should emphasize the culture-shaping role. Delivering a project and participation in the project requires teamwork. The project manager requires not only expertise, professional experience, and technical knowledge from the members of the project team, but also needs to put the individual interests in the background to achieve the project goals. The creation of a truly effective group culture also presupposes the sensitivity and the receptivity to the group problems from the project manager. However, these conditions require new tasks from project managers. The project leader can only expect the team members to put their individual interests in the background, if he/she develops a suitable motivation system for them, coordinates the

individual tasks with his subordinates effectively, informs them about expectations and difficulties that arise during the execution, and supports them with intensive professional consultations in solving difficulties that have arisen. These are the most important interaction-oriented roles of the project manager.

Among the person-oriented roles of the project manager, the micro-political role of the project manager should be highlighted. The project manager needs to have extensive relational capital within and outside of the organization for successful project delivery. When allocating resources and budgets, developing and fixing the terms of contracts within the framework of existing rules, the project manager needs to carry out strong and intensive lobbying activities for the project's success.

In relation to the function-oriented roles, the strategic role is generally expected from the project managers, meaning that by developing a correct project strategy, the project supports the achievement of organizational strategic goals. In addition, the project manager needs to perform classic management functions as well - planning, organizing, managing and controlling tasks.

Project managers need to manage their projects by applying the principles of the systems approach. That is, the project manager must not only represent the interests of the field from which he/she was delegated to lead the project but needs to integrate activities and approaches of the different areas impacted by the project and the exploitation of the positive synergies.

The leadership skills and leadership roles presented above play an important role in the effective management, the project performance, and in creating a positive environment that supports the successful execution of the project. Another important

challenge in project management is how much the leader works together with the project team, how much information he/she includes into the decision-making process from the project members and whether he/she decides alone or together with the group. These characteristics are determined by the management style of the project manager. Managerial behaviour has a significant impact on the effectiveness of the project team, so it is important to strive to use the appropriate management style.

The selection of the correct management style required for a given project is influenced by several areas, such as the characteristics of the task, personal qualities, and organizational characteristics. During the projects, a task is always time-limited, aimed at achieving a specific goal, extensive and complex, and most of the time it carries a novel and significant risk. During a project lifecycle a large number of specialists work on the project, therefore the project performance requires the project manager to have good personal qualities, such as communication, cooperation, conflict management skills and flexibility. In terms of the organization, various resources are needed from different departments, so instability is typical due to the temporary nature, and the project members position in the organization varies as well. According to Grochla, in leading of a project, using a different management style in each project phase would be appropriate, namely a more open, employee-oriented style in the initial phases, and a more goal-oriented, solution focused management style in the later phases. (Grochla, 1980)

In a following chapter of my Doctorate dissertation, I will present in detail the additional aspects of choosing a suitable and appropriate management or leader style, as well as the characteristics of each style.

2.9 Project stakeholders

The success of a project is influenced by the individuals involved in the project activity, small and large groups and other organizations whose interests are related to the project in many different ways or whose interests work against the project goals.

"The stakeholders of the project are usually people, groups of people or organizations who are actively interested in the project or whose interests are positively or negatively affected by the implementation or completion of the project." (PMBOK, 2006, p. 42)

An extremely important task of project management is to examine and identify the stakeholders, because on the one hand, the design of the project can be influenced by several interest groups, and on the other hand, it is a mutual relationship and the activities of the project team can also affect several stakeholders. (Wideman, 1998)

Different stakeholders of the project can have many influences on the project and its results, and their influence can vary and can appear in various ways during the project. Therefore, the project manager needs to identify as soon as possible the key stakeholders of the project and their expectations regarding the project, since the defining element of successful and effective project management activity is the partnership of the persons and groups involved in the project. (Zielasek, 1995)

Stakeholders can be distinguished are internal or external stakeholders. The internal stakeholders, on whom the project manager has a certain degree of influence, need to be involved in developing of the project strategy, as they play an extremely

important and supportive role in the development and in the implementation of the project. The impact of internal stakeholders on the project is mostly positive, as most internal stakeholders want to see that the project is successfully completed. The relationship with external stakeholders is quite different, as the project manager usually has no formal authority over the external stakeholders. In many cases, the attitude of these stakeholders towards the project, the implementation and the results is hostile and challenging. (Cleland, 1986) (Pinto, 2007)

The project's internal stakeholders mainly include senior management, functional managers, and project team members. Top management determines the scope of the project and controls the project manager’s activities. Their main expectation is that the project be completed on time, cost-effectively and with minimal negative impact on the functional requirements and on the organization. The functional managers usually provide the personnel of the project, which can give rise to significant conflicts. To minimise these conflicts, cooperation of the project managers and the functional managers is a basic requirement. The project manager needs to assess and evaluate the power and strength of functional areas as stakeholders with significant influence. Identification and continuous cost control and documentation ensure the financial support of the project from the stakeholders. This essential administrative service supports the project manager to make a decision to manage good relationship with stakeholders and the client, and to mandate proper cost management. The project team undertakes several tasks in completing the project. The project manager must therefore understand that the success of the project depends on the performance and commitment of the project members and the support of the stakeholders.

The external stakeholders of the project usually include the external environment: competitors, contracting partners and other external environmental groups. The client is always at the centre of the project implementation process. As an investor, you want to receive the results of the project as soon as possible, in an acceptable and usable condition, in exchange for a predetermined price. It requires continuous communication and information about the project performance during the planning, implementation and execution. Competitors can influence the successful completion of the project in many areas, for example, by introducing their new product to the market earlier. When evaluating the competitors as stakeholders, the project manager needs to collect all relevant information about the competitors' situation and plans. The contracting partners supply the various materials or other resources for the project. The project manager needs to provide the necessary information to the partners and then monitor and evaluate their activities. Among other external environmental groups, political, social, consumer, or other advocacy groups can influence the project also. The project manager needs to evaluate the influence of each group, the likelihood of their action, and be prepared to prevent and deal with them.

Internal Stakeholders	***External Stakeholders***
• *Owners* • *Investors* • *Company leaders* • *Employees* • *Project Managers* • *Project Members*	• *Project Managers* • *Project Members* • *Clients* • *Target Groups* • *Competitors* • *Partners* • *Government Organizations* • *Council Organizations* • *Civil Organizations* • *Professional Organizations* • *Citizens*

Table 5: Internal vs External project stakeholders
(own compilation)

Regarding the project stakeholders, it is important to keep in mind that the main purpose of the cooperation and communication with the project stakeholders is to support preventative activities to reduce possible resistance of other stakeholders to the project; and facilitate the project team's efforts to gain stakeholder support for the project's goals. (Cleland, 1986)

Block gave a helpful framework for the management of a project's stakeholders as the tasks to be performed in the below steps. (Block, 1983)

- During the process, the internal and/or external environment must first be evaluated, it must be examined whether the project is of such importance that it can generate a lot of interest in internally and externally as well;
- After that, the goals of the main stakeholders must be identified, then one's own opportunities and capabilities must be assessed, and the organization's own weaknesses and threats to the project's success must be found;
- While developing solutions, an action plan targeting the needs of the affected groups must be created, as well as the political and power tools, which are often indispensable in dealing with affected groups, must also be deployed.
- Finally, the solutions must be tested and refined, Applying solutions is an iterative, repetitive process since each measure can trigger a reaction from the affected groups.

The position and the behaviour of the stakeholders can change over time due to different reasons. It is therefore important that the project manager needs to re-evaluate the stakeholders at certain times or when a significant milestone is achieved and adjust management of the project accordingly.

2.10 Project Manager or Project Leader

“Management is about persuading people to do things they do not want to do, while leadership is about inspiring people to do things they never thought they could.” – Steve Jobs

A project must be led, managed, controlled and the events and phases monitored and reported. A project is usually characterized by the involvement of several areas, so a "special link" is inevitable. This "connector", who leads, monitors the project and reports about it, is the project manager. (Görög, 2013)

Throughout the project life cycle, the project manager is the one who, with the defined goal always in his/her mind, controls and leads the established project organization, facilitates cooperation of the involved areas, ensures the communication between the areas, and monitors that the project is on track, on time, and within budget. (Görög, 1999), (Görög, 2013), (Szabó, 2012)

2.10.1 Management theories

“Trust is good, but control is better.” – Vladimir Lenin

Leading and managing a project is a very complex and complicated task. The options for management of the project are determined by the purpose of the project (e.g., financial, construction, IT, etc.), and the personality of the project manager or leader. In order to successfully complete a project, the project manager fulfils management and leadership roles at the same time. (Görög, 2013)

In Taylor's words, the manager's task is to plan the work tasks precisely and in the plan the manager prescribes the place of all tools (including people), selects the right people, trains them and rewards them according to their performance. It considers the human being as a factor of production similar to the other materials, resources. (Taylor, 1983)

On the other hand, leadership "deals with human resources among the organizational particular resources, and it means, the leader has the ability to influence and mobilize the members of the organization to achieve the organizational goals." (Bakacsi, 2004, p. 182)

One of the most popular groupings of theories examining the scope of management tasks is attributed to Mintzberg, who divided the management roles into three categories. (Mintzberg, 1973)

- Interpersonal, between people: protocol, managerial, relationship-building and nurturing;
- Information: information collector, information disseminator, spokesperson; and
- Decision-making: entrepreneur-initiator, troubleshooter, resource-distributor, negotiator-persuasive.

The interpersonal role of the leader is shown in the interaction between individuals and groups. This includes the nominal or ceremonial leadership role, on the other hand, the task of motivating subordinates to achieve the goals of the assigned department, and thirdly, the role of a contact person inside and outside the organization. (Mintzberg, 1973)

In the information role, the leader transmits important information for the organization. The leader spends significant time gathering information and providing information. The leader acts as a central information collector in the project team. The leader informs the subordinates to the extent necessary to carry out their work. The role of spokesman means informing the environment. (Mintzberg, 1973)

In the decision-making role, the leader plays an initiating role, initiating reorganizations and projects. If an error has slipped into the execution of tasks, then the leader needs to eliminate the disturbance. The leader decides how to use the allocated budget, time, materials, equipment and other resources available to the department. Finally, the leader needs to negotiate and represent the interests of the department while contacting suppliers, subcontractors, customers and superior bodies. (Mintzberg, 1973)

According to Katz, managers must have three skills: (Katz, 1974)

- Conceptual - for top management, an overview of the entire range of organizational goals and activities is essential for strategic planning,
- Interpersonal - leadership, motivation and communication skills are important for all managers of the organization, not only in managing subordinates, but also in cooperation with the external environment,
- Technical - it is important for employees that the manager knows the methods and tools used in their department, or their use.

Fayol classified the functions of management into 5 different groups. He identified these task groups as planning, organization, provision, coordination, and control. (Fayol, 1984)

Summary of management theories

The formulations and results of the presented management theories are summarized in the table below:

Author	***Theory***
Mintzberg (1973)	***Interpersonal****, between people: protocol, managerial, relationship-building and nurturing;* ***Informational:*** *information collector, information disseminator, spokesperson; and* ***Decision-making:*** *entrepreneur-initiator, trouble-shooter, resource allocator, negotiator-persuasive.*
Katz (1974)	***Conceptual*** *- for top management, an overview of the entire range of organizational goals and activities is essential for strategic planning,* ***Interpersonal*** *- leadership, motivation and communication skills are important for all managers of the organization, not only in managing subordinates, but also in cooperation with the external environment,* ***Technical*** *- especially for supervisory management, the methods and tools used in their department are important, or for their use knowledge*

Fayol (1984)	***Duties of the manager**: planning, organization, arrangement, coordination, control*

Table 6: Summary of management theories
(own compilation)
(Based on Mintzberg 1973, Katz 1974, Fayol 1984)

To understand the management theories and leadership, I consider it essential to place personal leadership in the context of organizational behaviour. In the life of organizations, management activity means the management of "organised actions", "keeping things under control, management". (Gaál, et al., 2005, p. 24) In Fayol's (1984) interpretation, management is the set of planning, organizing, directing, coordinating and controlling functions. Compared to the functions created by Fayol, in later theories, later research and results combined the organizational and coordination tasks and the "leading function" (Gaál & Szabó, 2007, p. 22), the formulation of the leader, appeared as a new interpretation. In contrast to management, the focus of personal leadership is to influence and control the behaviour of people and groups in order to realize an idea.

2.10.2 Leadership - Project leader or Project manager?

"Leadership is about making others better as a result of your presence and making sure that impact lasts in your absence." – Sheryl Sandberg

To define what leadership means is quite difficult, very challenging, it is one of the most complex literatures within the organizational behaviour science, the most difficult phenomenon and concept. At first glance, it does not even make sense that when we discuss leadership, when we talk about leadership behaviour, leadership style, or leadership role - we do not talk about managerial function. Several researchers have some

truth, but none of them can claim a complete interpretation of the meaning of the leadership.

We can say that the content and interpretation of most behavioural phenomena have changed in location and time. This is extremely true for leadership: at different ages, in different geographical locations, under different social and economic conditions, researchers have described it in many different ways and leaders, managers have applied it in different ways.

During my career, the usage of the word “manager” has spread in different companies, industries, and countries as well. Time to time, it is "fashionable" to call everyone as “manager” but not every manager is a leader. As a result, the majority of people today do not feel the difference between the manager and leader and use the word that comes to mind or that they think is more elegant. However, the two concepts are not the same and I do believe it is worth seeing if there is a difference between the two activities – manager or leader.

The name manager (management) is most often used in business companies to designate the upper management of the work organization.

The term "leader" usually refers to senior corporate management, the Chief Officer level, above the managers. Leaders need to see the entire system, and for this they need a lot of information. They make decisions keeping the company interest first or as being responsible for the whole organization, while managers tend to focus on one problem or area. The manager’s task is to solve the given problem as quickly and completely as possible. Therefore, managerial activity is a fast-paced, multi-faceted job. Rather than planning the future of the company, managers need to perform current tasks.

It is an important expectation for managers that, despite all these difficulties, they can keep the processes under control and pass relevant on the information on to the leaders clearly and promptly.

Bennis defines the difference between a leader and a manager this way: "Leaders are people who do the right thing; managers are people who do things right." (Bennis, 1989, p. 36)

Reviewing the results of his research, Northouse highlights five qualities: intelligence (relatively speaking), self-confidence, determination, integrity, and sociability. (Northouse, 2001)

Buchanan and Huczynski's describe three factor groups: abilities (intelligence, relevant areas of knowledge, verbal expressiveness), sociability (participation, cooperativeness, acceptance) and motivation (willingness, persistence). (Buchanan & Huczynski, 2004)

Features highlighted by Dessler are: energetic/motivation, leadership intent, integrity/discipline, self-confidence, cognitive skills and knowledge of the business. (Dessler, 2002)

Nowadays, we are once again experiencing interest in leadership within the research of personality markers, so this trend is still alive today and can be considered as a significant research area. (Buchanan & Huczynski, 2004)

An example of this significant research area and its outcome is the research of Goleman and Boyatzis, who did not interpret it traditionally, they distinguish between

"traits" and behaviours (deeds, performed actions). Their findings can be classified as behavioural theories.

Based on neuroscience, emotionally and/or socially intelligent leadership is characterized by seven main competencies. (Goleman & Boyatzis, 2008)

- Empathy: understanding different motivations and needs;
- Listening: attentive listening, emotions, perceiving and accepting moods;
- Belonging to an organization: valuing values, unwritten norms and knowledge;
- Influence: persuasion through discussion, reference to the other's interests, getting support from important people;
- Development of others: time, energy for mentoring, enthusiastic coaching, providing feedback;
- Inspiration: vision, self-esteem of the team, positive emotional mood, to get the best out of those you lead
- Teamwork: do we require all members of the team to contribute, do we support them, do we encourage their cooperation.

Modern trends in leadership (for example, vision-based, charismatic, serving, ethical, authentic) since the 1980s, transformative leadership has been/is the most important role. Due to its "transformative" nature, it is logically related to the similarly developed "change management" mindset. (Farkas, 2013)

For a suitable impact, the leader needs to improve themselves, be exemplary and lead by example. The leader, the team and the person contribute to the change of corporate renewal with their own and with collective transformative thinking.

To achieve all this, some new or innovative management tools have come to the fore, such as charisma and emotional, symbolic-cultural effects. The "new leader": inspires; its tool is the vision of the future; helps the development of the "it makes sense" attitude; builds a shared sense of mission; creates a culture, in which the goals of the people and the organization meet, and where the participants are capable and have sufficient authority to achieve company and project goals. (Buchanan & Huczynski, 2004)

In the definition of Kouzes and Posner, leadership is the art of how to mobilize others for a determined struggle to achieve a common goal. According to the authors, if this “fight together” does not appear in the followers, in the conscious choice and in the internal need, then we can't even talk about leadership. The four main expectations of the followers by them: honesty, competence, foresight, and enthusiasm from leaders. In accordance with these, they consider authenticity to be the most important identification of a leader. (Kouzes & Posner, 2007)

2.10.3 Leadership - what makes a leader?

“Leaders don’t create followers; they create more leaders” – Tom Peters

A change in thinking about leadership started in 1975. This was when Mintzberg, based on a practical study of managerial activity, reached the conclusion, that there is a significant shift in emphasis in managerial activity compared to what is assumed under Fayol’s 5 more traditional management functions - planning, organization, provision, coordination, and control. (Fayol, 1984) No doubt that managers still have formal powers (authority) over their own organizational units, which designates their status within the organization, and they continue to exercise their traditional leadership function within

their powers (they plan, organize, manage operationally, coordinate and control) but the (top) leadership roles have been significantly enriched with new elements, in which a large similarity to traditional management functions can be discovered. (Mintzberg, 1975)

Their formal status and traditional leadership functions (roles) make it possible — and at the same time it is a forced duty — for the leader to develop relationships with subordinate and superior organizational members. These relationships are the source of every piece of information, on the basis of which manager can make decisions in a wide variety of organizational settings in matters ranging from strategy through structuring to personnel issues.

These activities appear as role expectations for the leader, so they need to be responded to by developing and practicing the appropriate roles. Mintzberg altogether distinguished ten management roles — which can be classified into three large groups: three interpersonal roles, three information roles, and these two role groups help the manager to fulfil his four decision-making roles. (Mintzberg, 1975)

Group	***Management Roles***
Interpersonal roles	*Figurehead* *Leader* *Liaison*
Informational roles	*Monitor* *Disseminator* *Spokesperson*
Decisional roles	*Entrepreneur* *Disturbance handler* *Resource allocator* *Negotiator*

Table 7: Leader roles by Mintzberg
(own compilation)
(Based on Mintzberg 1975)

Interpersonal roles – i.e. figurehead, manager, liaison – serve based on the formal powers and organizational status. Although some of these roles may be formal or routine, it seems that no manager can ignore them.

The head of any organizational unit often has ceremonial obligations to comply with, such as greeting visitors, receptions, handing out awards, at meetings chairmanship, etc. This is called the role of public appearances. The role of the "boss" means making decisions about hiring, redundancy, further training, motivating and encouraging subordinates. The higher we look in the hierarchy, the greater the importance of this role. The importance of creating and nurturing relationships, the liaison role is also increasing, becoming more recognized. It is effective for the manager, both inside and outside of the organization, to build a network of contacts - personal or professional, often informal and verbal. Through this networking, it becomes the nerve centre of the organization, it searches for information, but the reverse is also true: all information searches for the manager. This leads us to the next group of roles, the informational roles.

Informational roles – i.e. monitor, disseminator, spokesperson. A manager — who, by virtue of their status, finds it the easiest to connect with others and so acts as the "nerve centre" of the organization. The right decisions are essential to obtaining the appropriate information. The manager wants to know more about the organization than anyone else. The rest of the organization is usually "kept away", they can access to a lot of information only through the manager. A significant part of the relationships is established with other managers, who are also the nerve centre of their own departments.

In this way, the manager not only develops and concentrates a huge database of information but is usually the only one who can negotiate and can make decisions. The

manager does not “return to work” after a phone call. Rather, information and communication *are* the work. The three informational roles describe this informational side of this “nerve centre” work.

As an *information distributor*, the manager gives members of the organization all the information to which they have privileged access due to their role. This information may be required by a department during its daily operation. The manager also communicates decisions to the members of the organization as information. In this role, the manager is like a "nerve centre", while on the "neural pathways", on the reporting lines, the different part of the organization deliver every piece of information, signal and data, and the manager, as an information distributor, selects the necessary reports and information and forwards them to the place that waits for the appropriate answer to be given, if necessary, accompanied by an instruction or decision.

As *spokesperson*, this role is similar to the information distributor, only here the manager targets outside of the organization. Keeping in mind the achievement of the organizational goals, the manager informs, gives speeches, holds press conferences and negotiates. Note again: the external actors also look for this leader for information and expect answers or counter-information from the manager in questions concerning the organization.

Decisional roles – i.e. entrepreneur, disturbance handler, resource allocator, negotiator. Of course, information is not an end in itself, but an indispensable "input" for decision-making. The study of leadership makes it clear that the manager plays the main role in the organization's decision-making system. First, because the manager has all necessary information for defining the organization's strategy and making decisions in other far-reaching issues so supports all decision-making. Secondly, because the

manager’s formal authority also entitles the manager to make decisions themselves, to initiate important organizational actions. A decision-making manager must fulfil four roles.

As an *entrepreneur* the manager develops, forms the organization. The manager is constantly monitoring the changes in the market and operating environment, but at the same time the manager is looking for new ideas. When the pressure of a challenge in the market or operating environment meets a good idea, the manager initiates a development program to implement it. The manager either supervises personally or only reserves for themselves the final approval only.

A good manager always has a "stock" of good ideas, ready-to-start or half-finished development programs and projects. With such a background, the manager has a suitable set of answers, can respond sensitively to changes in the market and the environment, starts new programs at different times and terminate others. As an entrepreneur, the manager often relies on feelings, intuitions and "gut instinct".

While the entrepreneurial role portrays the manager as an independent initiator of businesses, the *disturbance handler* role responds to the constraints of daily operations. In practice, all managers are forced to spend a significant part of their time solving daily business as usual (BAU) problems. No organization functions so well and so regulated that it can take into account all changes in its uncertain external and internal environment. Disturbing circumstances constantly occur, which put pressure on the organization's activities; holding back or endangering its successful operation. Good managers cannot foresee all the consequences of their actions with complete accuracy at the same time. Yet action needs to be taken because the pressure of the situation is too great to be ignored without jeopardizing the organization. For example: export subsidies for their main product cease, a large customer becomes insolvent, if their supplier terminates a

contract, a plant is shut down due to a machine failure, organization's employees threaten to strike in order to raise their wages, are just a few possibilities.

Planned and decided actions can reach their goal by using the organization's resources, which are always limited. That is why the *resource allocator* role is so important, which assigns or re-allocates materials, machines, money and human resources to different promotions and programs. For the sake of organizational goals, the manager considers the expected benefits of resource allocation between certain actions compared to other possible allocations, and with this knowledge the distribution is approved by relevant organizational members.

Distribution of resources affects the organization's division and coordination, i.e., formal relationships as well. To this extent, through the role of resource distribution, the manager shapes the structure of the organization as well. The manager's own time is also a critical resource, whose allocation is more or less decided by the manager. The manager is the main user of the nerve centre and the main decision-maker of the organization.

The last decision role is *negotiating* and agreeing. A practical examination of leadership work at all management levels indicates that they spend a lot of time negotiating with external and internal actors. Their function is to acquire and provide information and to make agreements and decisions based on this. Negotiations and agreements are therefore an integral part of the manager's work - even if it is sometimes routine. The manager has the information and the necessary authority to reach an agreement. Usually, the other party does not want to negotiate and reach an agreement with anyone other than the manager.

Although the listed ten leadership roles build on each other and form a unity, it is obvious that not all managers pay equal attention to each role. According to different

research, for example, due to outward-facing marketing activities, sales managers spend relatively more of their time in interpersonal roles. At the same time, production managers devote more time to their decision-making roles, which is presumably required for efficient processes management work. At the same time, human resource managers spend most of their time on informational roles.

Mintzberg sees the manager work as a series of activity elements. The answer to the "what is the manager's job?" question by saying desk work, answering phones, making meetings, etc. classifies the activities into different categories. It records their frequency and based on this, he assigns goals and explanations to them and builds the ten management roles and the grouping. (Mintzberg, 1975)

According to Bennis' article, the answer to the "what is the manager's job?" question is different. (Bennis, 1989)

- *Management of Attention*: The ability to find a compelling cause or vision that will focus the minds and the energies of everyone.
- *Management of Meaning*: The ability to communicate the vision and dreams so they are tangible, have real meaning for others and will be supported.
- *Management of Trust*: The ability to be consistent, honest, and reliable in everything.
- *Management of Self*: The ability to know his/her strengths and weaknesses, nurture his/her strengths, and learn from mistakes.

In addition, Bennis points out the situations in which people are empowered. (Bennis, 1989)

- *People feel significant*: Everyone should feel that they make a difference to the organization's success.
- *Learning and competence matter*: Leaders value learning and acquiring new skills, and so do people who work for leaders.
- *People are part of a community*: Leaders develop and shape the culture of the organization, and everyone has the feeling of being part of a team.
- *Work is exciting*: Leaders design and create an environment where work is stimulating and challenging.

Kotter makes a much more practical distinction between the two complementary roles of management: manager and leader. (Kotter, 2001)

In the *managerial role*, the leader copes with organizational complexity. In today's increasingly large organizations, the desired quality and effectiveness cannot be ensured without a certain level of order and internal harmony. The result of a successfully fulfilled leader's role is efficiency, regulation and smooth operation.

In the *leader role*, on the other hand, the leader focuses on the necessary changes. The constantly changing political and economic environment, continuous technological development place the leader under pressure and force organizations to change. The result of a successfully fulfilled leadership role is an organization capable of renewal by recognizing the environmental challenges and responding appropriately to them.

According to Kotter the following table details the most important differences between the roles of manager and leader. (Kotter, 2001)

	Leader role – *Coping with Change*	***Manager role –*** *Coping with Complexity*

What are we setting out to do?	*Establishing Direction* *- Developing a vision and strategies to achieve that vision* *- Setting high but reasonable standards*	*Planning and Budgeting* *- Establishing detailed steps and timetables* *- Allocating resources*
How do we deliver results?	*Aligning People* *- Communicating direction to influence creation of the teams and coalitions that understand vision and strategy*	*Organizing and Staffing* *- Establishing a structure to achieve the plan* *- Delegating authority and providing policies and processes*
How do we make it happen?	*Motivating, Mentoring, Inspiring* *- Energizing people to develop and overcome barriers to change*	*Controlling and Problem Solving* *- Monitoring and organizing*
What are the outcomes?	*Producing Change* *- Often to a dramatic degree, such as cultivating new services and new approaches*	*Producing Predictability and Order* *- Consistently achieving budgets and targets*

Table 8: Differences between the roles of manager and leader
(own compilation)
(Based on Kotter, 2001, p85-96)

In both roles, managers and leaders carry out essential activities: define tasks or set up goals, create the conditions for implementation of these tasks or goals and ensure that the work is executed as required. Leaders versus managers perform these tasks in different ways in their managerial and leadership roles.

Set up goals: the manager, in the short-term and long-term, plans to manage the complexity, formulate the goals to be achieved and allocate budgets to achieve the goals. A leader with a view to successful change, on the other hand, has a vision for the future and creates necessary change strategies to achieve it. The vision and plans do not replace but complement each other: the vision is the compass and the plan is the map. A good plan helps to clarify the reality of the vision, while the vision gives the focus and the main points of the planning and designates what is necessary and unnecessary to include in the plan.

Conditions for implementation: The manager creates structures, job roles, responsibilities and job descriptions, selects people with the necessary skills for the task, creates a stakeholder system - in summary, creates a formal system. The leader's challenge is more communicative than system-creating: the leader has to get as many employees of the organization as possible to understand and accept the vision covering both those who can do something positive for its realization and those who can prevent its achievement. The scope is not understanding how and what we will do in the next few days, but what needs to be done completely differently in the future and why we cannot continue with the way we did it in the past. In order to get people on the leader's side, the leader needs to ensure all staff understand the need for change. Beyond this, the leader needs to achieve two more things: all staff accept this change as necessary, and understand this change is supported by the leader's personal brand.

Implementation or execution: the manager, by problem solving and controlling the operating systems, pushes people in the desired direction, while the leader, by satisfying the basic human needs, motivates the company as one team. The managers monitor the implementation of plans with reports, regular meetings, and controlling systems, and intervene in case of deviations, eliminating problems that arise. Leaders bring people on side through their needs, emotions and values and help them to overcome the uncertainty of the change process and strive to realize the originally set goals and achieve the vision. The leader keeps the importance of the goals awake, involves every colleague in the decisions that determine the implementation method and supporting structures and processes, and helps every colleague develop the right forms of behaviour. The leader recognizes and rewards immediately the team's or the individual's success, provides feedback and reinforces the achieved results and creates and maintains the atmosphere of the organization that pays attention to people.

One of the best ways for someone as a leader to understand self-awareness is to think deeper on the type of leader they already are. From there, the leader can think authentically about who they want to be. Leadership styles help a lot in this journey, and in positive and deliberate transformation.

I find a lot in my work that every person is unique, therefore they will be unique leaders as well. Some will exhibit only a few of these leadership styles, while others will adapt and modify their approach to each situation. I also find that often, one style seems to resonate more. Here are some leadership styles that I see Chief Officers and Executives use every day to lead their teams, to focus on their people and to achieve high-performance and bottom-line results:

Coaching style of leadership is one that seeks to motivate, inspire, and help others to become the best version of themselves. Sometimes, this means modelling and "doing" things by example. It also means asking open-ended questions, helping an individual through their own self-discovery to learn, grow and make sense of their experiences. It means that the leader goes "all in" to lift someone up in their development.

Visionary style of leadership is a future-focused and goal-oriented. Visionary leaders are able to see the strategic possibilities and opportunities in front of them and then mobilize others to put this vision to work and make it achievable.

Transformational leaders refuse to accept the status quo and are always innovating, inquiring, communicating, searching for improvement and listening to their teams. They make the culture better by making it more inclusive and provide clear direction to help the teams to overcome obstacles and achieve their goals.

2.10.4 Power and/or leadership

“Leaders become great, not because of their power, but because of their ability to empower others.” – John Maxwell

"It is better to be feared than to be loved if one cannot be both." - Niccolò Machiavelli

As you can see above, I cited two famous or hopefully known people with totally different perspectives about power and leadership. The first one focuses more on motivation, to bring the best out of others, while the second believes that fear is a better motivator than love, which is why it is a more effective tool for leaders. But who is right?

A leader or a manager can use several tools to influence a team or an organization. Obviously, the question is:

- what is the relationship between power and leadership?
- do they fit together in the leader's toolbox? If yes,
- when to use which one?

Pure power and pure leadership are two extreme endpoints of the power continuum: one end is brute, coercive use of power that disregards the will of others, while the other end is changing both the leader and the follower, transforming them, a leadership that takes the goals of others into account and raises them to a higher level. The transition between pure power and pure leadership style can be interpreted in countless dimensions: “power turns into influence, focus on the task turns into relationship orientation, and business turns into mutually agreed goals.” (Kerr & Jermier, 1978, p. 378)

In practice, we can find both tools in most managers. Leadership based purely on power technique is very rare, even in such special organizations, e.g. in a prison, penal camp, the leaders take into account the will or the wishes of the prisoners. Without it, they can lose obedience, and the use of negative power (rebellion, resistance) can undermine the normal functioning of the institution. If the individual joins the organization of his own free will, then leadership based exclusively on power leads to withdrawal in the vast majority of cases. At the same time, there are situations where leaders use tangible instruments of power: the army, police forces, or crisis situations in economic life. However, even in a clear power environment, we can still discover some leadership elements that recognize and satisfy certain needs.

But is there leadership without power? The exercise of power is neither a business deal nor a transformation, either of which only leadership can do. Leadership is undoubtedly a more attractive perspective than power, but it would be one-sided and idealistic to claim that only pure power or power leadership is effective. There are situations and decisions that can be solved without power, but in practice, power always plays a role in formulating of the ultimate goals of the organization and the allocation of organizational resources. (Howel, et al., 1990)

If there is no power vacuum, there is no leadership vacuum either. (Grundleger, et al., 2012) There are organizational situations when the leader is neither able to improve nor hold back the performance of the team or individual. So, what the leader does is actually irrelevant to the end result – these are the leadership neutralizers or substitutes, which render the leader unnecessary in the event that:

- task solving and initiative, as well as encouraging performance, come from the team itself, not from the leader provided the team has outstanding competencies, and is a cohesive group of individuals;

- technology, especially computer-based information technology, allows the employee to obtain the information necessary for task solving, initiating and encouraging performance on the basis the employee can act independently and does not need a hierarchical manager/leader-employee relationship;
- the employee has extensive professional training, and so does not need the guidance and support from the manager or leader, professionally the employee is better without the manager or leader;
- where the employee is not really interested in the benefits offered by the organization, by the incentive system, the leader's ability to influence is limited;
- the task is highly structured, or exactly defined, described in detail in the job description, then minimal managerial influence is required to fulfil it;
- the work itself enables internal motivational satisfaction so the employee does not need external feedback, reinforcement, or motivation from a certain point of view, even without a leader, the employee is "good", satisfied, self-directed;
- the organization formulates clear, unambiguous formalized goals, and the goals, the rules and procedures leading to achievement are clear and the policies of the organization determine what the employee expects from the leader where there are fewer clear goals and solutions.

2.10.5 Who we need - manager or leader?

"A leader is best when people barely know he exists; when his work is done, his aim is fulfilled, they will say - We did it ourselves." – Lao Tzu

Many people often ask if there is a need for a manager or a leader. If so, which one and when. If we want to answer this question, first of all we need to clarify that these are not leader or manager *types*, rather than manager or leader *roles*. I presented in the previous part by saying that the two roles complement - and in no way exclude - each other. The "manager or leader?" question is meaningless, in order for a leader to be successful they must play the role of leader at least sometimes, and vice-versa. Bakacsi said that the above question is based on two illusions: (Bakacsi, 2015)

- *The life of organizations is cyclical* - After a certain stable period, they are forced to change, and then the change is followed by another, more or less stable period. These are the natural stages of a development; they increase the organizational demand for one or the other role. For many, this is reflected in the fact that in the era of change they can see more leaders, while in the era of stability, managers rise to leading positions. The reality, however, is rather that one or another role becomes overwhelming, which can even be detected from the outside of the organisation. In fact, the era of change does not mean discarding all organizational order, and neither does the stable period mean immobility because minor changes can occur in this period also.
- *Creators or crisis managers, leaders* - Many people believe that there are managers whose specialty is leading the transformation of an organizations undergoing change: their strengths are creating a vision for the future, motivating and persuading. "They come, they see, they win" and they leave to support other organizations undergoing change. However, it would be difficult to argue that they equally know all the subtleties of their profession: they prepare excellent plans, operate control systems, and their organizations operate according to rules and procedures. However, with their leadership performance alone, they would never achieve the results expected of them, or the results which they promise – they need to be managers as well.

Kotter's recognition and theoretical contribution go beyond just presenting the leadership and management roles and their differences. We need to realize that, in contrast to the previous interpretation of leadership, Kotter does not define leadership in the broader sense, but he considers one of the functions of leadership is the change-related “function” involving management activities to achieve change. The leader’s “job” is to set the direction when changes are needed. The leader carries this out by undertaking management activities, and the leader considers these change-related management functions to be of equal weight with other ‘BAU’ management functions that ensure continuing efficient operation of the organisational system. (Kotter, 2001)

All "leaders" need to practice their managerial roles if they want to be successful, and all "managers" need to practice their leadership roles if they want to survive. For a given manager, differences in the centre of gravity between the two roles may occur in favour of one or the other role but adopting one or the other exclusively is unthinkable in practice.

2.10.6 Applicable leadership or management styles during projects

“Great leaders believe they work for the team; average leaders believe their team works for them.” – Alexander Den Heijer (Sutanto & Saputra, 2022, p. 97)

Based on the above definitions of management and leadership, it can be said that in order to successfully complete a project, the manager or leader of the project performs management and leadership functions at the same time. Accordingly, a leader only sets

the goal and helps to achieve and realize it. In the case of leadership style, it will never be the preferred style of the leader that leads to results, but rather the needs and personality of the led and controlled determine the successful leadership style.

The classic leadership formulations as known by everyone (Lewin, et al., 1939, p. 273)

- An autocratic leader usually makes the decisions alone and rarely allows other colleagues to participate in the decision-making process. The leadership methods are characterized by instruction and command.
- A democratic leader often makes decisions based on consensus and involves colleagues in the decision-making process. Its characteristic method is discussion, which can be described as the need to find a compromise, and the effort to convince.
- Laissez-faire passé (Anarchic) style leadership is characterized by the fact that the informal leaders within the group, i.e., the leaders who are not officially appointed, make the decisions, so it is impossible to make strategically important and professionally grounded decisions from the point of view of the whole organization.

The personality-centred leadership

Personality-centred theories are based on the leader's personality and orientation. In these theories, the leader's behaviour can be directed towards the task, the creation of a structure, or the employees. The most famous models are the results of research conducted at the University of Michigan and the University of Ohio.

In the late 1940s, researchers at the University of Michigan led by Likert and based on interviews with subordinates, two leadership styles were distinguished: the job-centred and employee-centred leadership behaviour.

A leader who exhibits, practices task-centric or goal-oriented behaviour and strictly monitors. This approach dictates how the team should work, and this "leader" is primarily interested in performance and monitors only performance. It is based on legal, rewarding and coercive forms of power.

The main characteristic of employee-centric leadership behaviour is the formation of a cohesive group. For this type of leader, it is important that the employees be satisfied with their work and feel good about themselves. The central element of this leadership behaviour is finding the appropriate group activity, the participation of the employees and ensuring their development. Decision-making powers are divided within the group, so control is less strict. (Griffin, 1984), (Guiot, 1984)

The designers of the above typology considered these two types of leadership styles mutually exclusive; the leader is either task-centric or employee-centric. Based on the large number of interviews, they found that the employee-centric leader style is generally more effective than the task-centric one.

Among the personality-centred leadership theories, the Ohio University model is the most complex. As researchers at Ohio State University, Halpin and Winer investigated the effectiveness of leadership styles used in the US Army, mainly using questionnaire research. Thousands of behaviours were narrowed down to two basic leadership styles with two independent dimensions (high and low): the initiating structure and the consideration.

The initiating structure dimension includes those behaviours that are aimed at work schedules, workplace relationships, objectives and meeting deadlines.

The attention to employee ("consideration") leadership style dimension is oriented towards cooperation with subordinates and building consensus. According to the Ohio University model, four leadership styles can be formed based on the possible combinations of the basic leadership style and the two mutually independent dimensions. (Halpin & Winer, 1957)

		Initiating Structure	
		High	***Low***
Consideration	***High***	***Leader "C"*** *High performance* *Low complaints* *Low people turnover*	***Leader "D"*** *Weak performance* *Low complaints* *Low people turnover*
	Low	***Leader "B"*** *High performance* *High complaints* *High people turnover*	***Leader "A"*** *Weak performance* *High complaints* *High people turnover*

Table 9: Ohio research – Leadership style impact to the behaviour
(own compilation)
(Based on Halpin & Winer,1957)

Based on the results of the effects of the different leadership styles on performance and satisfaction (i.e., on behaviour) we can say:

- "A" leadership style, where both the initiative-structuring and attention dimensions are low, people's performance is poor, there are many complaints and there is a high level of people's turnover also.

- "B" leadership style will have a positive effect on performance, but the number of complaints and the level of people's turnover are high.
- "C" leadership style (the most ideal), where the initiative-structuring and the attention dimension are high. As a result, performance is high, and the number of complaints and the rate of people's turnover are low.
- "D" leadership style, where the number of complaints is few and the level of people's turnover is low, but performance will be poor also.

Although, according to the Ohio University hypothesis, a leader who is both strongly people- and task-oriented should be the most effective, but according to the survey results and analysis, it seems, each combination can be effective if the specifics of the leadership situation demand it. (Halpin & Winer, 1957)

The research group of the University of Michigan identified two basic dimensions, similar to the theory of the University of Ohio: the employee-oriented (facilitating support and interactions) and the task-oriented (emphasizing the goal and facilitating work). The researchers concluded that the employee-oriented leadership style is much more effective than task-oriented. (Bakacsi, 1996) (House & Aditya, 1997) Based on the University of Ohio model, four leadership factors were identified: (1) task-emphasis and (2) work facilitation which together make up the task-oriented leadership style, and (3) facilitation of support and (4) interactions which together make up the employee-centric leadership style. Similar to the research results of the University of Ohio, the research of the University of Michigan also came to the conclusion that the employee-centric leadership style is generally more effective than the task-centric.

The most significant difference between the Ohio and Michigan theories is that, while the Ohio University model emphasizes the simultaneous implementation of the two

styles, the Michigan University model describes the two styles as mutually exclusive. (Bakacsi, 1996) (House & Aditya, 1997)

It can be considered, the result of the long journey of the Ohio and Michigan researchers that the basic questions, which drive the leadership style research, have changed. Since these two Universities' research, the researchers are not looking for the "best" leadership style anymore, but rather what leadership style is most appropriate in a given particular situation. (Halpin & Winer, 1957)

X-Y theory

According to McGregor's X-Y theory, managers' behaviour and management principles are basically determined by the assumptions they make about human nature, that is, their image of people. Based on this assumption, McGregor described the X-type and Y-type images of people, which represent the two extreme poles of beliefs about human nature. Leaders with X-type assume that people are basically lazy and instinctively do not like to work. On the other hand, managers who have the Y-type see people as ambitious beings, who primarily seek challenges and opportunities for self-development and self-realization rather than security during work. According to McGregor's idea, a good leader therefore strives to create conditions that give employees the opportunity to develop their creativity and live out their personal ambitions. Under such favourable conditions, people are happy to take responsibility and work motivated and committed to the organization's goals. (McGregor, 2006)

Situational leadership

The situational leadership model developed by Hersey and Blanchard in 1969 defined which leadership style is most effective depending on the different motivation levels and professional knowledge of each employee, since "there is nothing more unfair than when we treat different people the same." The theory states that rather than using just one style, successful leaders should change their leadership styles grounded on the maturity of the people they are leading and the details of the task. Using this proposition, leaders should be able to place more or less emphasis on the task and more or less emphasis on the connections with the people they are leading, depending on what is demanded to get the job done successfully. (Hersey & Blanchard, 1976)

According to Hersey and Blanchard, there are four main leadership styles:

- Directing (S1) – Leaders tell their people exactly what to do, and how to do it.
- Coaching (S2) – Leaders still provide information and direction, but there's more communication with people. Leaders "sell" their message to get the team on board.
- Supporting (S3) – Leaders focus more on the relationship and less on direction. The leader works with the team and shares decision making responsibilities.
- Delegating (S4) – Leaders pass most of the responsibility onto the follower or group. The leaders still monitor progress but are less involved in decisions.

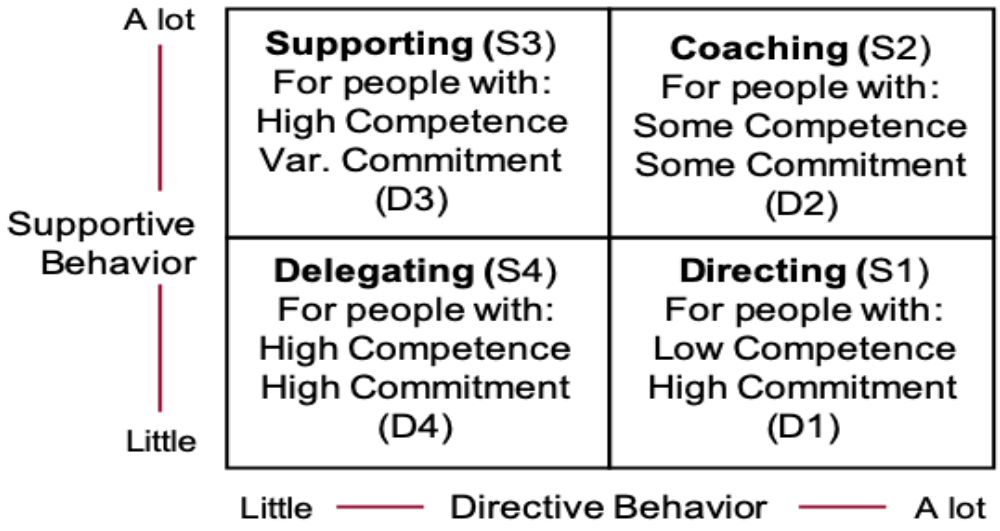

Figure 15: Situational leadership
(Hersey & Blanchard, 1976, p. 189)

When interpreting the above Figure 15, we can come to the conclusion that the worst leadership style is the "delegating" style (S4) while the best is the "coaching" style (S2). A leader with a coaching style strives to maintain a good relationship with the team and to achieve the set goal at the same time. To this end, the coaching leader strives for a clear interpretation of the task. On the other hand, the delegating (S4) leader does not strive to maintain a good relationship at all, and this leader is not guided by cooperation in the area of the assigned tasks either. The use of a coaching style is also recommended and beneficial because, in addition to achieving of the end goal, personal relationships (relationship-oriented leaders) play a major role in the success of each project. (Bakacsi, 1989), (Szabó & Dancsecz, 2009)

According to Hersey and Blanchard, knowing when to use each style is largely dependent on the maturity of the person or the team. Hersey and Blanchard set up the following 4 different maturity levels: (Hersey & Blanchard, 1976)

- M1 – People at this level of maturity are at the bottom level of the scale. They lack the knowledge, skills, or confidence to work on their own, and often need to be pushed to take the task on.
- M2 – At this level, followers might be willing to work on the task, but do not have the skills to complete the task successfully.
- M3 – Here, people are ready and willing to help with the task. They have more skills than the M2 group, but tare still not confident in their abilities.
- M4 – These people are able to work on their own. They have high confidence and strong skills and are committed to the task.

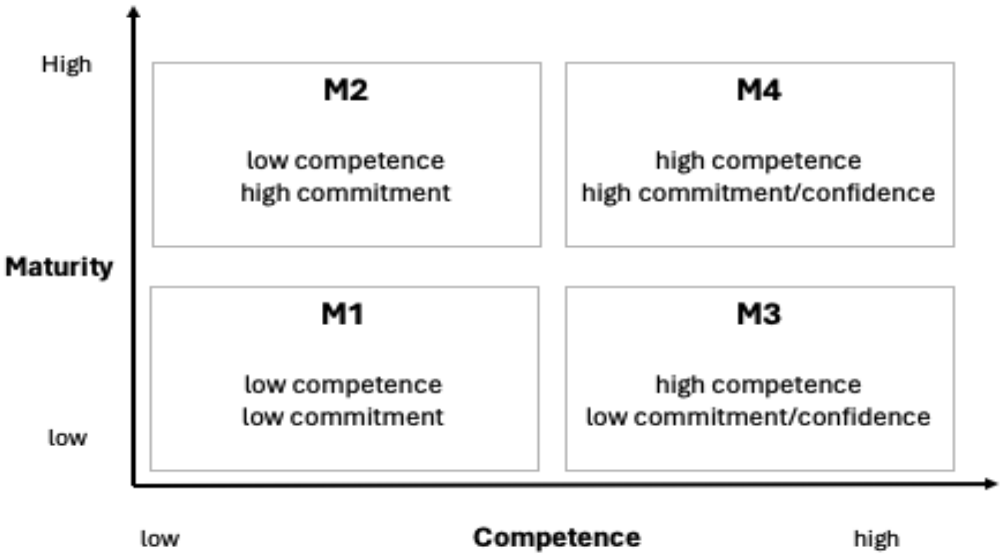

Figure 16: Maturity vs Competence level
(own compilation)
(Based on Hersey & Blanchard, 1976)

The Hersey-Blanchard model links each leadership style to a maturity level, as presented below.

Maturity Level	***Leadership Style***
M1 – Low Maturity	*S1 – Telling/Directing*
M2 – Medium Maturity, Limited skills	*S2 – Selling/Coaching*
M3 - Medium Maturity, Higher skills but lacking confidence	*S3 – Participating/Supporting*
M4 - High Maturity	*S4 – Delegating*

Table 10: Maturity level vs Leadership style
(own compilation)
(Based on Hersey & Blanchard, 1976)

Bennis and Nanus describe the differences between a leader and a manager this way: "Managers do their jobs well, and real leaders do good things." (Bennis & Nanus, 1985)

Leaders	***Managers***
do the right things	*do things right*
see people as great assets	*see people as liabilities*
seek commitment	*seek control, create, and follow the rules*
focus on outcomes	*focus on how things should be done*
see what and why things could be done	*seek compliance*
share information	*value secrecy*
promote networks	*use formal authority (hierarchy)*

Table 11: Leaders vs Managers
(own compilation)
(Based on Bennis & Nanus, 1985)

At the end of the day, every leader can be judged from a frame of values, ultimately. Ethics and leadership should go hand in hand. Effective leadership is a

consequence of ethical behaviour and the ethical conduct that is followed by those in leadership positions, can have a great impact on those who can be influenced and would like to follow the ethical principles. What is required by organisations is a group of leaders who are committed to looking further than short-term gains and immediate success. Relating the characteristics of ethical leaders will allow all communities to develop styles for relating to members that fit these criteria. Once individuals with potential as future leaders have been identified and selected, different development programs can be designed to meet the requirements of being a great leader and serve the organisation and the team best. (Hitt, 1990)

According to Hitt, there are four leadership types based on the level of vision (looking further leader) and its implementation. (Hitt, 1990)

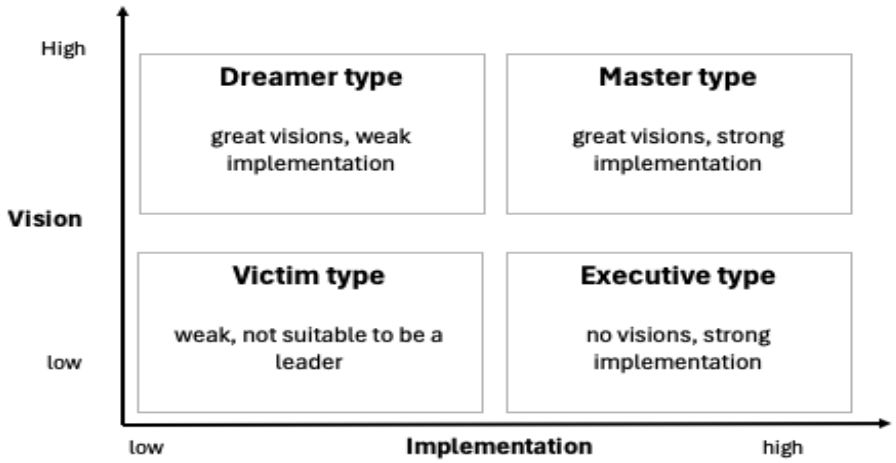

Figure 17: Leadership types and styles
(Hitt, 1990, p. 20)

- Victim type leader who has no ideas about what the company should be doing or how the problems should be solved. If this leader does come up with an idea, they cannot implement it, cannot get the team on one side either.

- Dreamer type leader has extremely good ideas and is creative but also unable to implement these ideas.
- Executive-type leader who is not very creative but can get his ideas accepted by employees and control the implementation.
- Master-type leader is someone who wants to be a role model for the employees. This leader has a lot of good ideas and can present them in a way that is accepted by others.

The following table details the dual role of leaders and managers – an aspect defined by Pinto. (Pinto, 2019)

Concerns	***Managers***	***Leaders***
Creation of Purpose	*Focus on plans and budgets Creates steps, timetables for achieving results and looks for resources to support goals*	*Establishes direction; creates a vision and the strategies needed to achieve it*
Developing a Networks for Achieving the Agenda	*Organizes and staffs; creates structure for achieving the plans; delegates responsibility and authority; develops procedures to guide behaviour; creates monitoring system*	*Aligns people with the target; communicates direction by word and deed to those whose cooperation is needed; creates teams that understand and share the project's vision*
Execution	*Controls and solves problems; monitors result and applies corrective action*	*Motivates and inspires; energizes people overcome obstacles and show personal initiative*
Outcomes	*Produces a degree of predictability and order; seeks to maintain the status quo*	*Produces change; challenges the status quo*
Focus	*Efficiency of operations*	*Effectiveness of outcomes*

Timeframe	*Short-term; avoid risks; maintaining and imitating*	*Long-term; taking risks; innovating and originating*

Table 12: Differences between managers and leaders
(Pinto, 2019, p. 144)

As a reminder, project management, as an organizational leadership activity, includes the managerial functions that Fayol summarized as the project manager's duties. He believed that project managers need to perform the following functions: project planning, project organization, project coordination, project management and project control. (Fayol, 1984) Since one of the project manager's "task" is managing teams and individuals, therefore the applicable leadership role is really important and the project manager has a significant impact on the project outcome, the project success.

I do believe, the manager and the leader roles cannot be separated from each other completely. Often the best leaders combine the qualities of both roles. In general, however, it can be said that the managerial role is effective primarily for middle and lower management levels, and leadership quality is a characteristic of senior managers. Therefore, we cannot say that one role is better than the other, both are needed for an organization to operate successfully and effectively. The business environment and situation, as well as the role in the hierarchy, determine which leader role should be used, strengthened and when. This also applies to the project manager in the context of project management.

2.10.7 Emotional intelligence in the leadership

The relationship between managerial approach and performance is a rather complex question not a simple answer - also in the field of project management. Great leaders have an impact on us all. They bring out the best in us and our souls. If we try to

find a reason why they affect us to such a large extent, then we talk about brilliant strategies, forward-thinking mentality or unbelievable, futuristic ideas. However, the truth is much simpler: the real leader is capturing our emotions.

In a survey conducted in 1970, when business life was very different from today, 250 executives said that their work requires their heads, not their hearts. Many said they were afraid that empathy or compassion for their employees would hold them back from carrying out their organizational tasks. I deeply believe that this kind of management view is no longer relevant today. Leading people does not mean overwhelming them - it means “coordinating their efforts to achieve a common goal.” (Goleman, 1995, pp. p. 223-224)

As a “result” of the mentioned survey, in 1970 researchers included emotional intelligence as a part of the definition of a successful leader. Since the 1980s, we have known that in addition to the intelligence (IQ), the role of emotions (EQ) is also very significant, even more important in becoming successful and achieving high performance. EQ is the ability to be aware of our own and other people's emotions and to "use" them in our social interactions. When practicing empathy, we initiate changes, cooperate, or even effectively lead others.

Goleman conducted research on the relationship between EQ and leadership, during which he examined managers based on emotional intelligence competencies. In Goleman's research, we read that the individual's success, effectiveness, and compliance with expectations are determined to a much lesser influence by a high IQ value than by emotional intelligence, i.e., the ability to use emotions intelligently, which means that the given person is able to direct their emotions according to the given situation to the right person with the right intensity, manner, and purpose. According to Goleman, EQ is more important than IQ and expertise. As a result of the research, six emotional leadership

styles were identified, which play a decisive role in terms of corporate success and satisfaction. (Goleman, 2000)

"Do what I tell you" - Commanding leadership

In this case, the leader commands authority. The leader gives orders and no-one can question the orders or the leader itself.

This can work well in crisis situations when quick and firm instructions are needed. However, in the long run, it is not motivating at all and rather breeds fear and resistance.

"Come with me" - Visionary

This is also called sometimes guiding, authentic, authoritative leadership. The leader is able to inspire, motivate and provide people with visions. If used well, the leader can provide a positive vision of the future which is very motivating.

This works well in most situations, but it is very important for the leader to maintain credibility.

"People come first" - Relationship-building style

Here, the person is in the centre for the leader. The leader strives for a harmonious relationship, puts emotions in the foreground and is capable of great cooperation.

It can be used very well to improve communication in stressful situations or during conflicts within the team. However, not accepting conflicts can be a source of danger.

"What do you think?" - Democratic style

The leader counts on everyone's opinion and people can feel that they are involved in the decision-making process, they have a say in things and their point of view is matters. It requires good communication and cooperation skills.

This works very well when new or different approaches are needed to achieve a goal and when there is time to synthesize the information. It is worth taking note that it slows down decision-making.

"Do as I do now" – Pacesetting style

When the leader sets high standards to achieve performance, shows this and is subject to the same rules as the team. This is good in situations where setting an example is the goal. For example, when introducing a new system or rule and the leaders stand behind and supports the new system or rule.

The “lead by example” style is rarely worth using because it is tiring for the leader to constantly be the best, and it also reduces the creativity and motivation inherent in the team.

"Try it out" - Coach approach, development style

According to Goleman, this style focuses on developing people's talents. A leader with a coaching approach is characterized by the leader seeing potential in the team or in an individual and enables them to achieve greater performance and overcome their own limitations. It helps them to find the right solution for their particular problem themselves, it does not take it from them. This type of leader gives their team challenging tasks, with which they increase their performance and bring out their inherent resources.

This style can only be applied if people want to grow, have a desire for self-development and the leader is accepted both professionally and as a person, authentic to them.

Leadership style	***Main characteristic***	***The Style in phrase***	***Underlying EQ competencies***	***When the style works best***	***Overall impact on "climate"***
Commanding	*Demands immediate compliance*	*"Do what I tell you"*	*Drive to achieve, initiative, self-control*	*In a crisis, to kick start, turnaround or with problem employees*	*Negative*
Visionary	*Mobilizes toward a vision*	*"Come with me"*	*Self-confidence, empathy, change catalyst*	*When changes require a new vision, or when a clear direction is needed*	*Mostly Strongly positive*
Affiliative	*Creates harmony and builds bonds*	*"People comes first"*	*Empathy, building relationship, communication*	*To heal rifts is a team or to motivate people during stressful circumstances*	*Positive*
Democratic	*Forges Consensus through participation*	*"What do you think?"*	*Collaboration, Team leadership, communication*	*To build buy-in, or consensus, or to get input from valuable employees*	*Positive*
Pacesetting	*Sets high standards for performance*	*"Do as I do, now"*	*Conscientiousness, drive to achieve*	*To get quick results from a highly motivated and competent team*	*Negative*
Coaching	*Develops People for the future*	*"Try this"*	*Developing others, empathy, self-awareness*	*To help an employee improve performance, or develop long-term strengths*	*Positive*

Table 13: The Six Leadership styles
(Goleman, 2000, p. 82-83)

According to Goleman, the best leaders do not use a single style, but they have a high adaptation skill and flexibly apply and alternate these styles according to the current situation, environmental conditions, individual motivations, and the inherent needs of the team. At this point, EQ is connected to performance, meaning the extent to which a leader can pay attention to bringing in the necessary attitude in a given situation in order to achieve greater performance and satisfaction. (Goleman, 2000)

As a summary and generally, we can say: Leading is not only possible in one way and not only one type of person can do it - which means that there is no single universal driving style, principle, methodology or research that can help to become a good leader and there is no path that suits everyone.

To be a good leader is a long journey, a never-ending learning and requires high adaptation capabilities.

2.11 Project success criteria

The basic goal of every project is to be successful.

However, it is a matter of judgement whether a project can be said to be successful. In the case of a simple, short-term project (e.g., replacement of windows in an apartment building), the evaluation of the project is simple, while in the case of a complex, long-term project with multiple contractors (e.g., construction of a new Metro line), all the project components and the evaluation of the result are also a complex, more complicated process. For instance, the end user deems a project successful if it

completely meets their needs, whereas the company's accountant deems it successful if the project remains within the allocated budget.

The success of a project can have many factors and criteria. (Szabó & Dancsecz, 2009) Such as:

- Project **success factors** are circumstances, facts and influences that determine the outcome of the project and thereby contribute to its success. (Dancsecz, 2008)
- The project **success criteria** are requirements, standards and criteria on the basis of which the project's results and success are judged and evaluated. (Dancsecz, 2008)

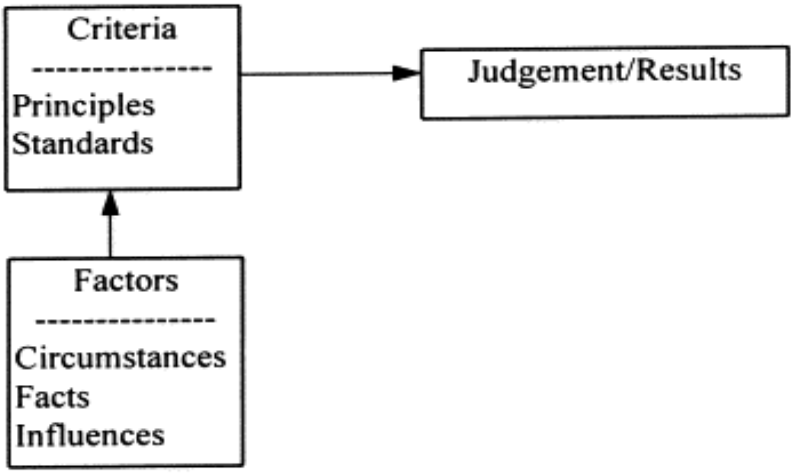

Figure 18: Success factors and criteria of a project
(Lim & Mohamed, 1999, p. 244)

The main objective of my DBA research is to examine and identify the success criteria, success factors, and other influences on the success of projects in Australian companies, which are all related to the judgment of a project - how we really can determine that the project was successful or failed, or whether it really reached the pre-determined project scope or not?

First, it is necessary to clarify what project success is when it can be declared that a project was successful.

"Anyone, who wants to form a judgment about the success factors of project management, must first face the problem of what should be understood by the success of a project." (Gemünden, et al., 1991, p. 16)

In the 1980s, several people recognized the anomaly in that the project success measurement system was out of date and out of step with developments in other areas. During this period, many surveys and market analyses were carried out, which revealed that the traditional "project triangle" or “iron triangle” (time, cost, scope or quality) is not necessarily sufficient anymore to judge accurately the project success. (Turner & Müller, 2005)

Based on reading the related literature, success is more than just to achieve the required result within the budget and time. Success is gaining advantage, winning, fulfilment, achieving results, goals and added value. As a result, judging the success of a project has evolved over the time in several dimensions:

- Success factors within the project cover an even wider area; and
- Evaluation point of success as a concept is separated: time, place (inside and outside of the organization), processes.

Project success is no longer necessarily interpreted within the framework of the project - the concept is transformed, and new levels of success appear: project success,

project management success, project-product success. (Atkinson, 1993), (Lim & Mohamed, 1999), (Shenhar, et al., 2001), (Turner & Müller, 2005)

Projects are launched by organizations for many purposes, such as construction of buildings, implementation of new software, product development, installation of security equipment. Regardless of the basic idea of the project - project success can always be linked to the efficiency and long-term success of the organization. (Turner & Müller, 2005)

According to Shenhar and his co-authors' general project success model: "Project success is realized at the company's strategic management level, where the success of projects and the long-term goals of the organization can be compared." (Shenhar, et al., 2001, p. 699) Studies have found that user satisfaction and overall project success show a close relationship.

Based on the results of studies, in addition to the success of the project, 12 independent success criteria were established: performance; compliance with technical requirements; compliance with scheduling goals; staying within budget; solving the problem of the end user(s); the extent to which the user is using the product; end user(s) satisfaction; business success; creating greater market share; creating a new market; creating a new product line and development of new technology. (Shenhar, et al., 2001)

Lim and Mohamed found that in terms of the relationship between satisfaction and project success, satisfaction, whether in terms of project staff or customer satisfaction, is one of the important success criteria in assessing project success, as employees' and the stakeholders' satisfaction play a key role in evaluating project

success. (Lim & Mohamed, 1999) Several attempts and trends have been made to transform the system for measuring success.

In my opinion, Atkinson published the best summary of project success. As a conclusion of his research, he divided the mistakes made by unsuccessful information technology projects into two groups: the first type was “we did something wrong”, while the second type was “we could have done better, something was missed”. (Atkinson, 1993) Committing the second type of error may attract new success criteria and make the assessment based on the “iron triangle” (time, cost and scope or quality) outdated. His suggestion that a four-factor success model (a "square way") should be used by these projects (the traditional “iron triangle”, information system requirements, organizational benefits and benefits that can be realized by stakeholders). (Atkinson, 1993)

As a result of Atkinson’s study, his proposal is to use a four-factor success criteria model (the “square route”) introducing a fourth dimension for these projects:

- The traditional “project triangle” (time, cost and scope or quality)
- The quality of information technology systems (The Information System),
- Available (direct) benefits to the organization (Benefits - Organizational),
- Available (indirect) benefits to a wider stakeholder community (Benefits - Stakeholder Community).

Project triangle	***The Information System***	***Benefits - Organizational***	***Benefits - Stakeholder Community***

Time *Cost* *Scope*	*Maintainability* *Reliability* *Validity* *Information - quality use*	*Improved efficiency* *Improved Effectiveness* *Increased profits* *Strategic Goals* *Organizational learning* *Reduced Waste*	*Satisfied Users* *Social and Environmental impact* *Personal development* *Professional Learning* *Contractors Profits* *Capital suppliers, content project team, Economic impact to surrounding community*

Table 14: Four-factor success model
(Atkinson, 1993, p. 341.)

Of course, each project is unique and may have different constraints, with different importance, and not all the above will be considered to decide whether the project is successful. It is possible that more emphasis will be placed on quality, resulting in higher costs. But still, the project can be defined as a success. Or the project implementation time will increase, but it will end with a result that makes it successful. The success of a project is very complex, determined by considering many criteria with different weight.

2.11.1 Traditional approaches

The aspects listed below are often referred to as the “Project Management Triangle” and illustrated in the literature as the "sacred triangle" or “project triangle” According to these concepts, if these defined requirements are fulfilled by the project, then it is successful, if not fulfilled, then the project is unsuccessful. (Turner & Cochrane, 1993), (Atkinson, 1993), (Wateridge, 1995), (Görög, 1999), (Madauss, 2000), (Görög & Ternyik, 2001).

Recall the meaning of the project defined at the beginning of this thesis: “Project is a unique venture with a beginning and an end, conducted by people to meet established goals within parameters of cost, schedule and quality.” (Buchanan & Boddy, 1992, p. 8)

Visualisation helps to understand the way of seeing, the connections and the impacts - that it is not possible to change only one side, because of the close connections of the “elements”. (Madauss, 2000), (Turner & Cochrane, 1993), (Atkinson, 1993)

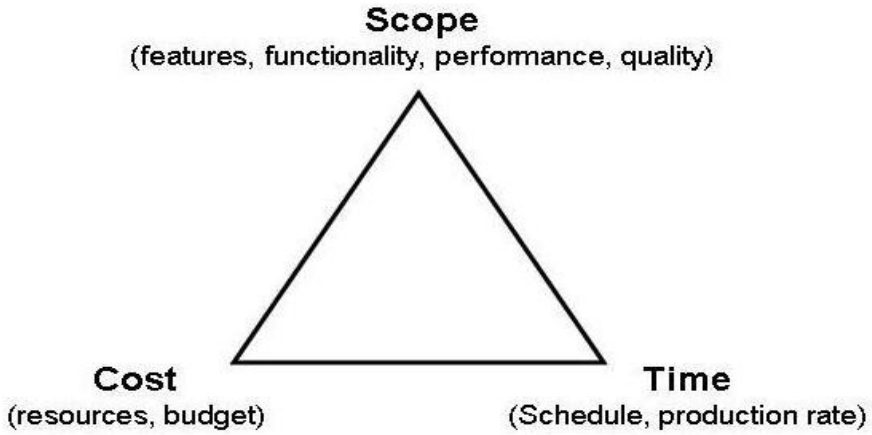

Figure 19: Project Management Triangle
(own compilation)

- *Time:* project timeline - available, allocated time to execute a project.

The total time requirement of the project is equal to the sum of the durations required to complete the various activities and processes during the project. In the case of interdependent processes, the project time is much longer than in the case of parallel processes. It is important to calculate not only the actual work done during the project's turnaround time, but also the auxiliary activities that may be necessary. For example, during the construction of a house, paving takes 2 days, but the workers cannot step on the laid paving slabs for another 2 days. The work takes 2 days, but 4 days are required,

and this required timeframe must be considered in the plan. (Görög, 1999), (Madauss, 2000), (Görög & Ternyik, 2001), (Turner & Cochrane, 1993), (Atkinson, 1993)

- *Cost:* allocated amount spending to the project, project budget.

At the start of a project, during the planning period, after time consuming and detailed duration calculations, it is determined how much the project may cost. This is the budget, which the project manager is responsible for monitoring. In order to determine and plan the appropriate budget, several factors need to be considered. For example: labour costs, material costs, tools, licensing costs, etc. These costs can be fixed or variable and may change during the lifetime of the project. All such possible changes and changes to a specified cost are the responsibility of the project owners and project sponsors. The task of the project manager is to provide full information about the change and the project in accordance with the decision for further management. After the completion of the project, a final cost summary is prepared. (Görög, 1999), (Madauss, 2000), (Görög & Ternyik, 2001), (Turner & Cochrane, 1993), (Atkinson, 1993)

- *Scope or quality:* goal, result - tasks to be delivered by the project.

This is essentially something new and/or better - product, service, processes, technology, etc. created as the result of the project. The scope also determines the quality of the end result. A precisely defined expectation not only determines the result but also determines what does not need to be dealt with during the project, what is out of scope. (Görög, 1999), (Madauss, 2000), (Görög & Ternyik, 2001), (Turner & Cochrane, 1993), (Atkinson, 1993)

Of course, the purpose of the project may change during the delivery, new scopes may be added or existing ones removed, but they all involve changes in cost and time.

2.11.2 Theoretical approaches

In connection with the growth of the strategic role of projects and the prominence of project management, according to the literature, in addition to the previously presented traditional “Project Management Triangle” or “iron triangle” (time, cost, scope or quality) other impacts and criteria also play a role in the success or failure of a project. Accordingly, in addition to the classical approach, the concept of project success has received a broader theoretical interpretation over time.

According to De Wit’s interpretation, project success is determined by overall project success and project management success. More specifically, success is achieved through the satisfaction of all members involved in the project and the achievement of the project's goal. The success of a project can be assessed by measuring the achievement of the project goal, the satisfaction of the target group, the satisfaction of the contributors, and the subsequent results of the project. However, the De Wit points out that the success of project management may not affect the ultimate success of a project. It is possible that the project will be successful despite poor project management or, conversely, the project will fail despite excellent project management. (De Wit, 1988)

Baker and his colleagues have given rise to a more permissive definition of success. Namely, according to the approach, the most important aspects are the achievement of the project goal, the satisfaction of the target group, the project sponsors and the satisfaction of the members of the project team, while the cost and deadline are

less important. Hence the most important task is to achieve the goal, no matter how much time is required, no matter how much it costs. After the project ends an important factor is the "echo" of the project: how satisfied the project members were with what they thought during the project. This goal-oriented implementation makes the project "more tolerable," but can be time-consuming or expensive for the company. (Baker, et al., 1988)

Pinto and Slevin determined a slightly opposite statement - a project that adheres to cost, time, and project goal can be defined as a successful project, but "only" for the target group, which are the end users, within the acceptable range. That is, the project is completed within a specified time and budget, but to a lower standard. That is, one of the elements of the traditional "project triangle" (time, cost, scope or quality), suffers and, as a result, some elements of other target systems are sacrificed also. (Pinto & Slevin, 1988)

According to Turner's approach, project managers have a poor approach to project success and feasibility. This is because the time and budget are already set at the start of the project, and these are not the most important criteria. The study lists several recommended success criteria to help us judge a project, but also says that despite failing to miss all of them at the same time, the project could still be successful. The selection and identification of the listed conditions is possible only after consultation with the stakeholders and the definition of the project goal. (Turner, 2007)

Based on the definitions and ideas that determine the theory of project success developed over time, the idea emerged that in addition to the classic "Project Management Triangle" (time, cost, scope or quality), additional conditions are characteristic of the success of the project.

Atkinson's study emphasizes that by measuring the traditional “iron triangle” system, we do not measure success, but we point to certain mistakes, “we did something wrong”. In contrast, multi-criteria evaluation not only reveals the errors and the faulty processes, but also answers the question “what should we have done”. (Atkinson, 1993)

He proposed the below measurements:

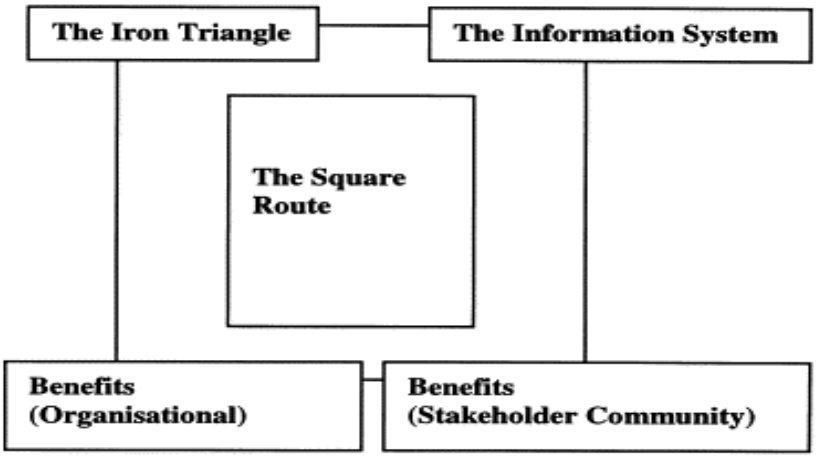

Figure 20: The Square Route
(Atkinson, 1993, p. 341)

The formulations in the above figure are:

- *The iron triangle*: time, cost, scope, or quality (Project Management Triangle);
- *The information system*: characteristics of the newly created system as the goal of the project;
- *Benefits - Organizational*: support of a given company/organization, as the project results in improved efficiency, increased effectiveness, profit;

- *Benefits - Stakeholders*: the satisfaction of the target group, the project members, the full range of participants, increase in their income, their impact on the environment.

2.11.3 Empirical approaches

In relation to the growth of the strategic role of projects and the prominence of project management, researchers - such as De Wit, Baker et al, Pinto-Slevin, Wateridge, Bryde, Bryde-Robinson - discovered that beyond the "traditional three goal system", the "project triangle", the additional target systems and criteria mentioned above also play a significant role in the success or failure of a project. Accordingly, the practical, research-based support of the project's success came to the fore more and more.

The results of Wateridge's first survey about project success measurement were based on questionnaires and interviews published in 1998. In this study, in addition to the classic quality, time, and cost criteria, three additional criteria are formulated. (Wateridge, 1998) These are:

- Achieving a defined goal, fulfilling specifications;
- Satisfaction of the target group, increase in the organization's profit;
- Satisfaction of project members, increase in profits of participants/suppliers.

Bryde and later with Robinson after carrying out their research, summarizing and analysing the questionnaire surveys and in-depth interviews, listed these criteria as conditions for project success: (Bryde, 2003) (Bryde & Robinson, 2005)

- Cost effective work;
- Positive response to changes;
- Achieving set project goals;

- Seamless handover;
- Customer satisfaction.

Summary of success criteria

Assessing the success of a project is not an easy task. It is extremely complex work, since the studies also recommend considering more and more aspects to judge the success of a project. These recommendations, studies did not highlight or group the criteria, since for a given project, all of the given criteria or a few of them may be taken into account with the same weight when judging the success of the project.

Author	***Success criteria***
De Wit (1988)	*Cost-quality-deadline (project management success) fulfilment of project goals (functionality, customer, supplier, project team satisfaction)*
Baker et al. (1988)	*Performance parameters, completion of project mission, achievement of satisfaction*
Pinto-Slevin (1988)	*Fulfilment of cost-quality-deadline, acceptable and usable for the initiator*
Freeman-Beale (1992)	*Technical performance, efficiency, engagement, personal development, closure, innovation and business performance*
Atkinson (1993)	*Cost-quality-deadline fulfilment, reliability and sustainability, support of the creating organization and stakeholders*
Turner (2007)	*Cost-quality-deadline, fulfilment of defined project goals, achievement of business goals and profit, meeting the needs of stakeholders and project team*
Wateridge (1998)	*Cost-quality-deadline, fulfilment of expected goals, fulfilment of expected business goals of owner and partners, satisfaction of users, partners and project team*

Bryde (2003), Bryde-Robinson (2005)	*Fulfilment of set project goals, customer satisfaction, smooth handover, flexibility, cost-effective work*

Table 15: Project success criteria - summary
(Dancsecz, 2008, p. 75)

2.12 Project success factors

In the previous chapter, different success criteria used to assess the success of various projects were presented. During a project, even at the time of planning, the purpose and result of the project must be completely clear and understandable, along with the expectations and criteria set for them. After all, by "fulfilling" these criteria, a project can be successfully managed and completed with adequate results. If we are aware of the determinants of success, we can count on different risks occurring during the project and we can be prepared for them already during the planning phasis. Knowing the success criteria, the best possible solutions can be chosen for problems and risks that may arise during the life of the project.

According to Lim-Mohamed, success can have not only criteria, but also factors and helpers. In other words, the external and internal effects, facts, and environment that can influence the success of the project - all need to be listed and taken into account. (Lim & Mohamed, 1999)

Boyton and Zmud say, in addition to the basic factors, critical factors can also be identified during a project. These are the things and processes that are mandatory to fulfil,

as they can have a decisive influence on the success of the project. Here, management tasks are considered primarily. As a result of these, the project needs to be continuously and closely monitored. (Boynton & Zmud, 1984)

According to Wateridge in addition to meeting user needs, the project also need to pay attention to other factors (user participation, communication) that help to achieve the project success. In his opinion, this special attention can be applied to the "damage" of other areas which may receive less attention as a result. (Wateridge, 1995)

2.12.1 Empirical approaches

Baker and his colleagues examined a wide range of different industry projects in their research. They examined only American projects and collected success factors by interviewing project managers using questionnaires. The researchers examined the factors influencing the success and failure of the executed projects. After summarizing the results, it was determined that the factors that help and have a positive effect on projects, are precisely defined success criteria: the establishment of appropriate control, coordination and relationships, and internal capacities. On the contrary, in the case of unsuccessful projects, pressure due to expectations and declining motivation, enthusiasm and optimism had a significant impact. (Baker, et al., 1988)

The most important definition is relationships and coordination. The lack of positive and effective working relationships and the lack of coordination between project participants, or incorrectly applying these, results in decreasing motivation and participation of the project members. In turn, ultimately this can cause the project's goal not to be achieved, and the project's failure. During the analysis, it was established that both the helping and the hindering factors and effects can be kept under the control of the

project manager and the project members. Thus the success of the project is more easily likely through proactive solutions to the problems and difficulties that arise. (Baker, et al., 1988)

According to Pinto and Slevin's studies, the success of a project can be divided into 10 key success factors. (Pinto & Slevin, 1987), (Pinto & Slevin, 1988)

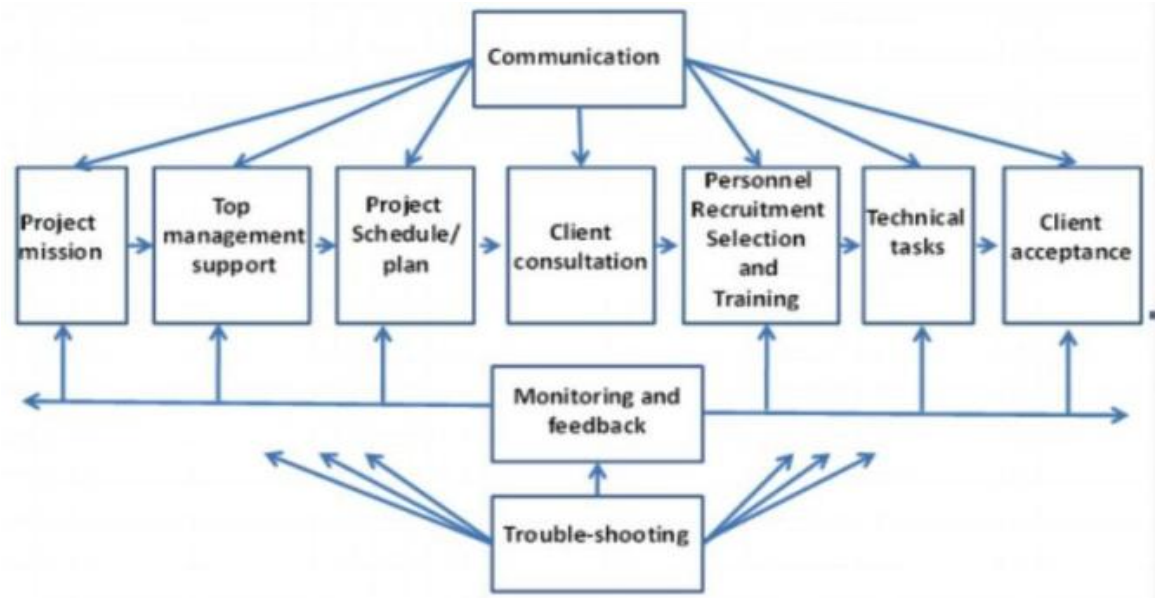

Figure 21: Top 10 Critical Success Factors
(Pinto & Slevin, 1988, p. 58)

Based on Pinto and Slevin research, it can be concluded that one of the most important success factors is communication. If there is no information flow within the project, whether between members or end users, or between people outside of the project, it greatly hinders the project and condemns it to failure. (Pinto & Slevin, 1988)

Also, important factors are *the support of managers, senior stakeholders* (project sponsors, owners), *the exact definition of the beginning* and *the end of each phase* (milestones), and *consultation with users* (colleagues, customers) about the ongoing

project execution, solution delivery. From the point of view of the project, the permanence of the project members can be decisive. If the project members change, with new participants joining mid-way needing to understand the progress and learn the relevant subject matter, there is a negative effect on the entire project in time, cost, and communication. An important milestone and factor at the end of the project is the acceptance of the result, the acceptance of the delivered solution or the new thing by the user. After that, after the "go-live", there is an evaluation and feedback to the project manager(s), so the project can be completed successfully. Unfortunately (based on practical experience), there is no problem-free path to complete a successful project. Every project has unforeseen problems that must be dealt with immediately and solved quickly, efficiently and appropriately at the right time. Developing the appropriate problem-solving method is an important factor already at the start of the project and it can be decisive during the execution how fast the project manager and members can react.

Gemünden and his co-authors, after identifying the success factors and after counting the positive effects, found that the most important influencing factors for the success of a project are human factors. This includes the company's structure, the personality and leading style of the program and project manager, the skills and personalities of the project members, their relationships and their communication skills. These factors can contribute to the success of the project to a much greater extent than the existing technical factors or those formulated as goals. (Gemünden, et al., 1991)

Cooke-Davies and De Wit were thinking further on the work they started by separating project success and project management success. They were focusing on the success of project management and stated that there is no such thing as an unsuccessful project. (De Wit, 1988), (Cooke-Davis, 2002)

Starting from this and examining it, they concluded that project management success should not be examined by itself but broken down into three additional factors:

- What are the key success criteria for project management?
- What are the criteria for the success of individual projects?
- What factors lead to repeatable project success?

Leung and his colleagues examined the satisfaction of project managers and members by examining construction projects. As a result, it can be concluded that, beyond the "project triangle", cooperation, identification with the project's goal, and commitment are extremely important for the success of a project, while conflict between project members has a distinctly negative effect. (Leung, et al., 2004)

Summary of success factors

Assessing the project success is a complex work, as the studies reviewed above recommended a large number of factors to judge the success of a project. The studies did not highlight or group the factors, since for a given project, all or some of the given factors may be considered with equal weight in the assessment for a given project.

Author	***Success factor***
Baker et al (1988)	*Coordination and relationships, appropriateness of project structure and control, importance and publicity of the project, negotiation and highlighting of success criteria, building internal capacities*
Pinto-Slevin (1988)	*Project assignment, TOP management support, schedule, consultation with the client, staff, technical performance, acceptance of results, monitoring and feedback, communication, debugging*

Gemünden, et al. (1991), Lechler (1997)	*Project characteristics (importance, complexity, project environment)* *Characteristics of project actors (TOP management, project manager and project team)* *Project functions (participation, planning and management, information and communication)*
Cooke-Davies (2002, 2004)	*Project management activity success factors: clear and achievable project goals, effective project team, sufficient resources, effective risk management and performance measurement, authority definition and control* *Project success factors: commitment of stakeholders, effective support management and process system, cooperation between project management and functional management* *Conscious project success factors: continuous development, effective portfolio and program management and methods, organizational learning*
Leung at al. (2004)	*Factors related to the project task: nature of the project, definition of basic values, goal specification* *Factors related to the project team: practice, competence, cooperation and participation, communication, commitment to the scope*

Table 16: Project success factor – summary

(Dancsecz, 2008, p. 84)

When collating the result of the success factor research studies, it can be observed that "human" conditions consistently occupy a prominent role among the success factors. In other words, it is very important to communicate with the project members, the formed project team, the relationships between the project members, the impacted and support areas (relationship orientation), and the outstanding importance of communication between them. In addition to these, factors, that are related to tasks and functions (task orientation) are also a powerful influencing factor. However, each research study was

conducted for a specific country or industry. As a result, from the studies reviewed above, it is not possible to give a general description of the success factors of a project.

CHAPTER III:
RESEARCH METHODOLOGY

3.1 Introduction

In previous chapters of my DBA thesis, I presented the definitions of project and project management and in addition to the traditional approach, I presented the success criteria and success factors affecting a project success. I dealt with the structure of the different project organizations, program and project management, and different management styles.

I conducted my doctorate research at different Australian organizations to verify, prove, disprove theories, or draw alternative conclusions. In the chapters to follow, I will cover the research model, the conduct of the research, the processing of the answers received and interpretation and comparison of the results received. The analysis of the results and the purpose of the research are to determine the main components of the success factors and criteria that affect the success of projects within the investigated Australian organizations and to discover the existing relationships between these success factors and criteria.

Today's society is often called an information society since information and knowledge have become an independent valuable asset which is as the basis of technological development. Nowadays, finding information about any known or unknown concept, phenomenon, or process is not difficult. The challenge is in how we can select the scientifically based, "valid" knowledge from the endless and opaque flood of information. How can we separate trusted sources from questionable ones? This is

even more challenging by developments in science, changes our knowledge rapidly. As a result, something we ‘know’ to be true today may not be true tomorrow.

In order to acquire and maintain competitive knowledge in the labour market, possessing trusted scientifically based knowledge is becoming more and more important. It may also be important to be able to carry out methodologically sound research that yields reliable results, both individually and in a research team.

The concept of scientific research has already been defined by many people, some of them are astonishing.

According to Zora Neale Hurston, anthropologist, “Research is formalized curiosity. It is poking and prying with a purpose.” (Hurston, 1966)

According to the well-known saying of Albert Szent-Györgyi, “Research is to see what everybody else has seen and to think what nobody else has thought.” (Szent-Györgyi, 1957)

In the literature of research methodology, of course, we can find standard and formal definitions as well. One of them, generally accepted, reads as: During scientific research - in contrast to the previously discussed ordinary opportunities for acquiring untrusted knowledge - after defining the research problem or question, the researcher collects data in a planned and regular manner, processes and analyses the data according to the expected content elements and form of scientific publications published to others. (Héra & Ligeti, 2005)

Science and scientific thinking are an essential part of development. At the same time, it is a fact that the result of scientific research is not a “stand alone” solution to a given problem, but it helps to understand the investigated phenomenon, to get to know its

characteristics, and at the same time to support or reject a previously known fact. The goal of a research is therefore to update and expand our knowledge to achieve a well-defined goal.

3.2 Research Objectives & Questions

In summary, it is clear from the above paragraphs that since the project always uses different resources, it is "created" for a certain period of time, therefore it is necessary to plan, monitor and control the progress of the execution, the progress of the project overall and compare with preliminary plans. (Papp, 2001) Then take the "lessons learned" exercise and make a "judgement" within the project team - the project succeeded or failed. This raises the question: does every participant in a project see the project in the same way, or they do have different opinions or judgment?

Based on what the Program or Project management, IT Departments, Business Analysts or Business side/End Users say, can we really determine whether the project was successful, whether the project reached the pre-determined project scope? It is reasonable to analyse and understand the relation between the different project members' opinions about the project's success or failure.

Purpose of the Research

The objective of any research work in the field of social science can be basically exploratory, descriptive and explanatory. Exploratory research is carried out when we do not yet have sufficient prior knowledge of the phenomenon to be investigated, so we try to form an approximate picture by scouting the area. In the course of descriptive research, the aim is to examine, observe and accurately describe the characteristics of the

investigated phenomenon or area, while the aim of explanatory research is to reveal and present the relationship between the elements of the investigated phenomenon. (Héra & Ligeti, 2005)

My research work starts with the descriptive research among the categories presented above, however, the analyses and results of the study also contain explanatory experiences. The basic aim of the research, - as it was presented in the introductory part of the thesis – is the identification of the variables that impact project success in Australian organizations and the exploration and analysis of the relationships between the success factors and success criteria.

The use of different research methods makes it possible to explore the processes and laws to be investigated during the research and to prove the hypotheses. (Majoros, 2004) Scientific methods can be interpreted as practical and theoretical procedures. During the practical procedure, the goal is to perform an activity, while during the theoretical procedure, the task is to learn and process scientific results and data. (Somogyi, et al., 2002) In Salamon and Hanson's grouping, logical and special methods are distinguished, where logical methods can be used in all fields of science, while special methods differ by discipline. (Salamon & Hanson, 1970)

In terms of the theoretical approach, the present research follows the logic of deductive and inductive thinking at the same time. Inductive logic starts from individual observation and moves towards the general, while the deductive approach starts from theoretical and logical assumptions, which it examines and verifies through observations and experience. (Babbie, 1996) (Babbie, 2003)

This thesis, at the same time, uses qualitative and quantitative tools of social science methodologies in order to achieve relevant and comprehensive results. (Ramsey, 1999) During the joint application of the methods, different elements of the investigated phenomenon, possibly complementary to each other, are revealed, and support each other and new ideas and research directions emerge, therefore we can get a more comprehensive picture of the investigated research topic. (Creswell, 1994)

Quantitative research tools strive for measurement, quantities, and the quantification of the investigated meanings. At the same time, qualitative research methods focus on characteristics or attributes, they try to answer research questions by examining the quality of individual things and phenomena under investigation in a more descriptive or narrative way. (Héra & Ligeti, 2005)

The goal of my DBA research is to examine and identify variables, based on which we can say that a project is success or failure. This "judgement" can be very different in many organizations and can be different within one organization based on the project participants' opinion or role within the project.

During my DBA journey, I will investigate and try to identify the success criteria or success factors with hypothesis testing and answering these questions.

- Whether the different positions held by the project members have or do not have an impact on their opinion of the project "judgment",
- Whether the greater work experience has or does not have an impact on their opinion of the project "judgment".

Research assumptions – hypothesis

A hypothesis is a statement, an assumption about the expected result of the research, which must be verified or refuted during the research. The hypothesis can be logically derived based on our theoretical knowledge, which needs to be supported by data obtained from empirical research. In the hypothesis of the research, a characteristic, causality or relationship related to the subject of the research can be stated. The hypothesis is therefore the guiding thread of the research, which determines what is worth studying. The researcher must always be careful when formulating the hypothesis(es) and has to rely on previous knowledge related to the given problem, which is why it is necessary to be familiar with the literature before starting the research. An important feature of a good hypothesis is that, whenever possible, it points towards new knowledge and approaches, surpasses previous knowledge, or questions it. Hypotheses show the direction of data collection, on the basis of which factual data need to be collected and the relationship between them needs to be explored. For a scientific problem, it is necessary to set up several hypotheses if possible.

In order to answer the research questions of my DBA thesis, as well as considering theories related to my research and my workplace experiences, I formulated the following assumptions.

1. Assumption

In the examined Australian company, a difference can be shown in the judgment of the elements describing the success criteria of the project members based on their role in the project.

2. Assumption

In the examined Australian company, a difference can be shown in the judgment of the elements describing the success factors of the project members based on their role in the project.

3. Assumption

In the examined Australian company, there is a difference in the assessment of success criteria regarding work experience.

4. Assumption

In the examined Australian company, there is a difference in the assessment of success factors regarding work experience.

Research Model

The research model was developed to visually display the literature review, to set research goals, research questions, and the assumptions.

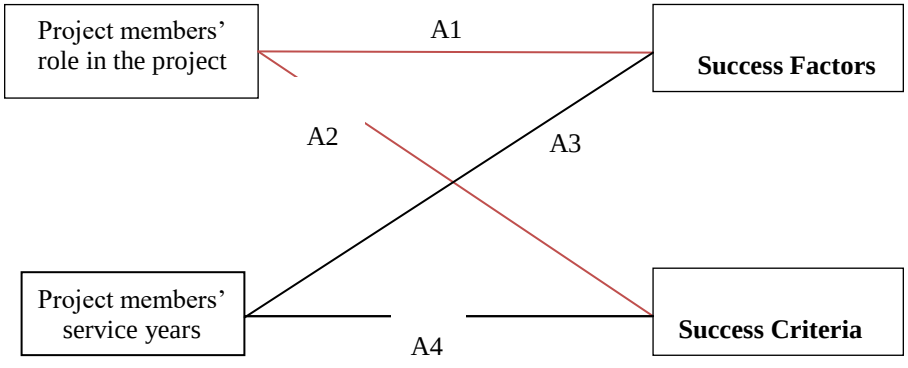

Figure 22: Research Model
(own compilation)

In the research model, based on the reviewed literature and my personal experience, I will analyse the factors affecting the success of projects in the examined Australian organizations. Relying on theories and practice, I will evaluate the success factors and success criteria of the different projects carried out at the Australian organizations based on the positions of the project members of the key areas and through the length of time each key member has been in their career.

3.3 Research Methods and Design

After formulating the research problem, we prepare the plan for conducting the investigation in the very first phase of the research, which will guide the researcher through the entire process. This step during any research is really important and necessary because the mental modelling of the process can shed light on the difficulties and possibly insoluble problems of the research, but more importantly, the plan will define a coherent, connected process that will characterize the entire research exercise. During planning, we link each phase back to the previous phase(s) and examine how they build on each other. In this way, the error that already completed tasks may have can be corrected. Extreme cases of being forced to start the entire research exercise over again can be avoided.

Creating a research plan is not an easy task, it is a process full of challenges, but it forces the researcher to define the phases of the research. The main elements of my research plan are illustrated in the below Figure.

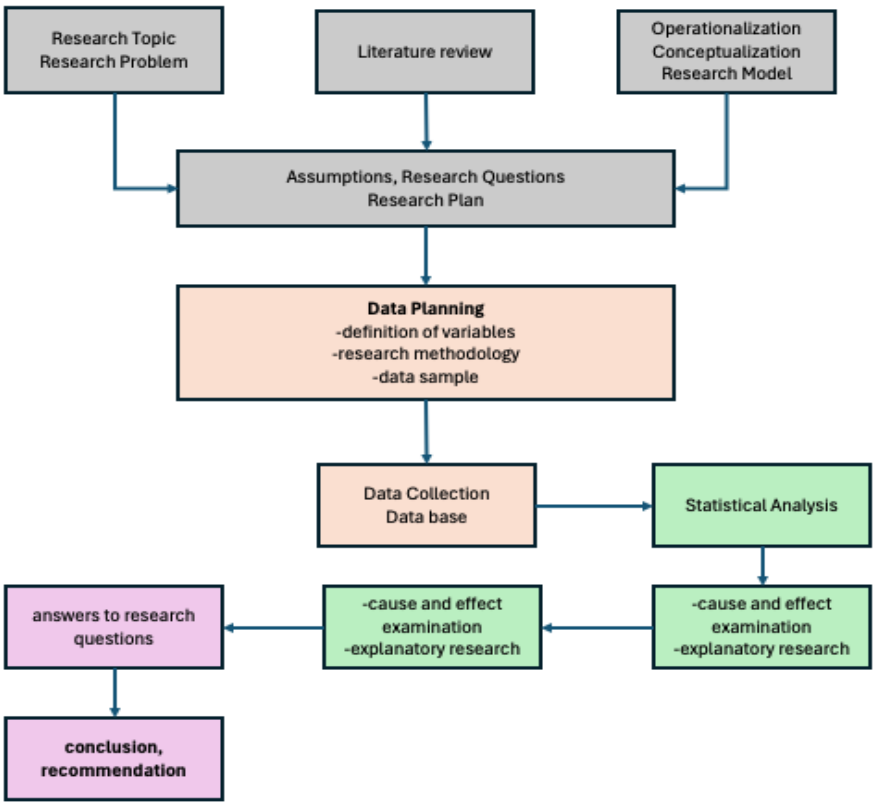

Figure 23: High level Research Plan
(own compilation)

The choice of my dissertation topic and the definition of research problems and questions determine the type of research to be carried out. With the definition of the research problems in hand, it is possible to talk about exploratory, comparative, historical and explanatory research.

When determining the method of scientific research, we must decide whether to achieve our research goals using qualitative or quantitative methods, or a combination of both.

3.3.1 Quantitative research methods

The quantitative research method is based on the premise that collecting a large number of data, and applying systematic, rule-based, measurement and quantification are useful tools in the learning process and we can answer our research questions. Quantitative research is usually deductive in nature with the researcher typically collecting information on a large number of samples to verify the hypotheses and outlined theoretical statements. Sample selection is an essential element of quantitative research, since reliable results can only be obtained by using large sample that represents the population to be investigated. For this type of research, due to the large sample, it is essential to use mathematical-statistical methods The results of the research are also quantified, considering the requirements of statistical reliability tests. Its main research tool is the questionnaire survey (survey technique). Many other tools are known, such as the structured interview and structured observation. Quantitative research is used in many different sciences and real-life research, such as in health science which include satisfaction surveys, needs surveys, and surveys on health status.

Descriptive statistics

The tools of descriptive statistics within the quantitative research method, serves to organize and evaluate the numerical presentation and characterization of investigated phenomena. Exploring characteristics of the research sample and the presenting occurrence rates in the data set are supported by graphical tools.

Factor analysis

Among the multivariate statistical analyses, factor analysis is not just a single procedure but includes a specific set of multivariate statistical procedures. During factor

analysis, we create "artificial dimensions, factors that are highly correlated with several observed variables and that are independent of each other." (Babbie, 2003, p. 511)

Factor analysis has two basic goals: to reveal the structure of the data and to reduce the amount of data. As a result, it is possible to create new, latent variables that reflect the behaviour and content of the initial data and measure the correlation of the original variables.

During factor analysis, we must first check whether our data are suitable for factor analysis. The correlation and covariance matrix of the standardized variables is used for this determination, which reflects correlations between variables, since its existence is a basic condition for factor analysis. During the calculation, the standardized form of the initial data will be analysed, and the resulting factors will be similarly standardized. In the case of the examined correlations, the result is not adequate if the correlation coefficients are too low, or if the correlation between the variables is too high, i.e. multicollinearity exists. The Kaiser-Meyer-Olkin (KMO) measure and the Bartlett test are used to support the acceptance of the correlation coefficients and the suitability of the data. In the case of the Kaiser-Meyer-Olkin index, if we get a value greater than 0.5, our variables are suitable for factor analysis, and the closer the KMO value is to 1, the better results we can expect from the analysis. In the case of a Bartlett test, the smallest value of the significance level, lower than 0.05, indicates that factor analysis is recommended. (Sajtos & Mitev, 2007)

In the next step, when the factors are created, during which, from the original data, we need compresses existing variables into factor variables new dimensions and these variables are in a strong correlation relationship, in such a way that the established

factor variables no longer correlate with each other. The value of the correlation between the original variables and the created factors is given by the factor weights, which can be used to determine how much of the original information is covered by the created latent variables. Among the methods of factor analysis, the use of the Maximum-likelihood method is the most common, which, assuming a multivariate normal distribution of the variables, gives estimates that create the correlation matrix with the highest probability. (Sajtos & Mitev, 2007)

Finally, the factors are rotated to make the model easier to interpret. During the rotation of the factors, the fit of the model and the information content covered by the factors together do not change, but the ratio of "each factor sharing the amount of preserved information" changes. (Székelyi & Barna, 2005, p. 54) As a result of the rotation, the variance explained by the factors will be more proportional, and the interpretation will be simpler. (Sajtos & Mitev, 2007)

The composition of the individual factors can be determined using the rotated factor weight matrix created after the rotation. The factor weight must reach at least the level of 0.25 in order to be considered an element of the given factor. The individual factors are made up of the variables with the largest factor weight, because the higher the factor weight belonging to the variable, the greater the proportion of the variance of the variable explained by the given factor. (Székelyi & Barna, 2005)

Variance and discriminant analysis

Using the analysis of variance (ANOVA) method, we examine the extent to which the individual groups differ from each other based on the averages of given

variables. During the analysis, we compare the averages of the factor values achieved by the examined groups in order to find the areas and variables where the average values achieved by the groups differ significantly from each other. During the analysis of variance, the difference is confirmed by the low significance of the F-test (Sig.<0.1). (Székelyi & Barna, 2005)

After the analysis of variance, we can perform a discriminant analysis, which can be used to estimate whether or not the given variables really distinguish the groups of dependent variables from each other. The analysis is based on the Wilks' lambda statistic, which shows how much an independent variable contributes to the discriminant function. The value of the indicator can be between 0 and 1. If it takes a value close to 0, then the independent variable influences the groups, while if the indicator is close to 1, it has no significant effect on the groups. (Sajtos & Mitev, 2007)

Linear regression and correlation analysis

Linear regression and correlation analysis are used to examine the relationships between variables. The nature and character of the relationship between the variables of the investigated phenomenon can be determined by regression analysis, while the strength and intensity of the relationship can be determined by correlation calculation. (Kerékgyártó & Mundruczó, 1987)

Before performing linear regression and correlation analyses, we must make sure that our variables are suitable for conducting the analyses. To decide this, we must examine the fulfilment of the conditions for the variables and the error terms.

One of the conditions for setting up a linear regression model is normality, that is, the matching of the variables with a normal distribution. If the deviation from the normal distribution is large, then several statistical tests, such as the F- and t-tests, cannot be applied, and thus the obtained results cannot be evaluated. Among the tests suitable for normality testing, one of the most frequently used methods is the Kolmogorov-Smirnov test. According to the test's null hypothesis (H0), the distribution of the variable does not differ significantly from the normal distribution. If the significance of the test differs from zero (Sig.>0.01), then we accept the null hypothesis, because the requirement of normality of the variables is met. (Reimann & Tóth, 1985)

Examining the condition regarding the deterministic nature of the explanatory variables is necessary when the analyses are performed with respect to random variables. Since specific data is analysed in this case, we do not need to examine the fulfilment of this condition separately.

The third condition for the variables examinations, which is the independence of the explanatory variables, is also fulfilled during the analysis, since the latent variables created as a result of the factor analysis are examined, which are independent of each other, so there is no linear correlation between them.

In the linear regression analysis, we also assume the independence of the error terms. If this condition is not met, then we are talking about autocorrelation and as a consequence, the F- and t-statistics cannot be used. Since we have cross-sectional data available during the research, autocorrelation cannot occur in this case, so the residuals can be considered as independent of each other.

If, based on the results of the performed tests, the conditions for the variables and the error terms are met, we can conclude that the variables are suitable for conducting linear regression and correlation analysis.

When performing the linear regression analysis, we look for an answer to the existence, direction, and strength of the relationship between the variables, in addition to specifying the dependent and independent variables. During the bivariate linear regression calculation, we examine the movement of a dependent variable as a function of an independent variable, while in the multivariate linear regression calculation, we examine the development of a dependent variable as a function of several independent variables. During multivariate regression, the strength of the relationship can be demonstrated by the square of the multiple correlation coefficient (symbol: R), which is also called the multiple determination coefficient (symbol: R2). The higher the value of R2, the stronger the relationship, i.e. the better the explanatory power of the model. The smallest value of the standard error of the estimate (symbol: SEE) supports the accuracy of the forecast, and the low significance of the F-test and t-test ($p<0.05$) also confirms the existence of the assumed relationship. (Sajtos & Mitev, 2007)

During the correlation analysis, the correlation (or Pearson's) coefficient (sign: r) is determined by the absolute value, of which shows the closeness of the relationship between the factors, while its sign shows the direction of the relationship. The closer the value of the correlation coefficient is to 1, the stronger the relationship between the variables; while the closer the value is to 0, the looser the co-movement. (Zwerenz, 2006) When assessing the intensity of the relationship, an "r" value below ±0.3 is weak, a value between ±0.3 and ±0.5 is moderately close, and a coefficient above ±0.5 is a close

relationship. If we get a value of r=0, then there is no linear relationship between the variables and no need to examine the relationship strength also. The square of the correlation coefficient, the coefficient of determination (sign: r2), which gives the answer to what percentage of the variance of the dependent variable is explained by the independent variable. (Sajtos & Mitev, 2007)

Significance test

We can perform a significance test to analyse the differences between the linear correlation coefficients. The method attempts to estimate whether two correlation coefficients are significantly different from each other or significantly the same for a given number of sample elements.

3.3.2 Qualitative research methods

In my dissertation, qualitative tools are applied to supplement quantitative methods, and to examine problems and complex issues that cannot be represented in statistics.

Qualitative research can be based on the one hand, on primary research techniques during which primary data collection takes place, such as observation, experiments, in-depth interviews, or questionnaires. On the other hand, existing secondary data, historical processes, and case studies may also be processed and analysed qualitatively. (Yin, 2003)

The case study investigation enables detailed and in-depth data collection and analysis through multiple and rich sources of information. (Creswell, 1998) In order to

apply qualitative research method, data and information about the investigated phenomenon must be systematically collected in order to describe and study the processes, events and problems in full detail.

During the case study investigation, the goal is to discover and analyse interesting cases, and not to use random sampling. Organizations and cases should be selected, so that knowledge gained and analysis conducted provides useful and interesting experiences. (Eisenhardt, 1989)

Primary and secondary research methods

In the case of primary research, first-hand information is collected and analysed for a specific research purpose. Research can be qualitative and/or quantitative. The experiment, questionnaire survey, observation and interview methods can be classified into this group. For secondary research, the data to be processed comes from other sources, which were not primarily recorded for research purposes.

The questionnaire survey

For the research topic of my Dissertation, the use of a questionnaire survey is the appropriate research option. Since questionnaire research is a quantitative research method, if there are enough answers, it will provide a solid basis for confirming or refuting effective conclusions and assumptions. An additional argument in favour of using a questionnaire survey is that the questions are clear, so that the respondents can also give clear answers. There will be no ambiguous statements in the questionnaire and respondents' opinions will not be influenced by the wording of questions. During the questionnaire research, I want to use multiple-choice, closed question forms because the answers are easy to analyse and can be well-measured using a scale. Filling in the

questionnaires will be done by a self-filling method, where the respondent will determine when to fill it out and return the questionnaire. There will be no personal meeting regarding the questionnaire.

The questionnaire survey is the most frequently used primary research and information-gathering technique, suitable for descriptive, explanatory, and exploratory purposes. The advantage is that it is relatively easy to carry out and mostly does not burden the respondents, properly edited and completed questionnaires can provide relevant information for the researcher. For certain research topics, it is often the only practical option. The disadvantage is the subjectivity of the researcher and the interviewee, and sometimes the lack of honesty. With the self-filling approach, the respondent reads, interprets, and answers the questions independently. Disadvantages are that the filling may be incomplete in the case of inappropriate questioning and interpretation problems. While preparing the self-edited questionnaire, we can rely on the unchanged wording of questions already used in previous investigations. This allows us to choose the best relevant question already been asked and also provides the opportunity to compare with our own results later on.

The questions can be grouped based on the function of the questions. We distinguish between "main questions", which relate directly to the research topic, from "supplementary questions", which help to evaluate the results from the main questions, e.g. demographic data.

Based on the research type and model, we can prepare open and closed-question surveys. According to the answer options, we distinguish between single- and multiple-answer closed questions when the respondent marks appropriate answer(s) from among

the options provided. The advantage is that the writing skills of the interviewees are not essential, and the number of answers received is greater. The task of the interviewees is simpler, more questions can be asked and the answers are more uniform and easier to process. In the case of closed questions, the principle of completeness is a basic requirement, according to which the entire range of answer options must be covered, if this cannot be fulfilled, the "other" answer option (half-open or half-closed question) can be used at the end of the closed questions. The respondent answers the open question in their own words. It is informative and gives more freedom in forming opinions. Advantages are that the questions are to create, answers are not suggested to the respondents, and the answers received can help to formulate closed questions. The disadvantage is that it requires more time and effort and a high level of writing skills from the respondent, they do not allow a larger number of questions to be asked, and the processing is more complicated and time-consuming. It is advisable to use an open question if the researcher is interested in the respondent's opinion or thoughts and does not want to influence the respondent with the offered answer options.

3.4 Conceptualization

In the background of the research, there are very often problems to be solved from practical, professional life. In addition to recognizing this, it must be clearly seen that empirical research is always conducted with a theoretical foundation. Therefore, when starting the research, it is important to create the theoretical and conceptual framework within which the research problems, the related concepts, the variables to be applied and the hypotheses to be answered can be interpreted. An important starting point for beginning any research is that, based on the available knowledge, we cannot provide an answer to the problem that has arisen. However, this does not mean that the research can

be started or carried out without theoretical determination. Research, that does not have a theoretical framework behind it, is difficult to fit into the accumulated scientific knowledge. In such cases, there is no guiding principle, and other phenomenon or theory to compare or connect with. The theories that support the treatment of the research problem serve as a starting point, establish the researcher's approach and guide the research process. The knowledge that is already available determines the research questions and helps develop the tools, analyses and interpretations to be used in the research. (Majoros, 2004)

In addition to developing the theoretical and conceptual framework, another essential element of the research is conceptualization, which is the clear definition of the conceptual frameworks used in the research. This is necessary, because in many cases, even familiar concepts have different meanings among the participants in the research.

The process of conceptualization in all research is followed by the process of operationalization, making the answers measurable. Operationalization is operations and procedures that enable the variables and concepts included in the research to be examined and measured empirically. Measurement is the process when a number, i.e.: piece of data, is assigned to a designated question of the investigated topic or processes based on a given rule.

I will send the prepared questionnaire in electronic form to all participants working in different Australian organizations and different areas within the organization. Since the topic of my DBA research is “Identification of variables that impact project success in Australian companies”, it is essential for the research and questioning to involve several organizations, companies, departments, teams, individuals and positions.

Participants work in different Australian organizations, companies, areas and departments. All of them will get the same questionnaire, regardless of their role or position within their organization or project.

3.5 Operationalization of variables

The questionnaire starts with a general introduction and explanation. I have described for research participants what the purpose of the research is, why I request their help, how they can populate the answers and what are the possible answers to the questions. The questionnaire also contains general questions about the organization of the participants completing it. In the research related part of the questionnaire, I have questions about the circumstances affecting their projects, success factors and success criteria, duties of the project manager, the afterlife of the project and project objectives, and the available resources. Using the questionnaire, I will assess the opinion and satisfaction of the research participants using closed questions. The respondents are asked to mark the answers on a scale of 1-6.

When selecting research participants, I will consider the field in which they work, and whether the information that will be received could reliably convey the opinions of the respondents and the results of the analysis, and whether conclusions drawn from the collected information can be evaluated, so that sample obtained covers the base population. The different project areas will faithfully represent the real project members' positions and departments: project managers, end users, IT specialists including developers and technical analysts providing a technical background, and business analysts. Specialists from all key areas will be included, but at the same time I will not be able to achieve full representation since, in the rapidly changing project environments

and structures it is not possible to accurately identify the actual size of the base population of each area within an organization. Therefore, I will try to ensure that individual groups are included in the sample in the proportion expected in industry, so the possible differences in attitudes can be better identified. Participants chosen to have adequate work experience in their respective fields and are of various nationalities.

3.6 Data Collection Procedure

Compilation of the questionnaire

The questionnaire survey is the most frequently used primary research and information-gathering technique, suitable for descriptive and exploratory purposes. The advantage is that it is relatively easy to carry out, it usually does not burden the respondents and a properly edited and completed questionnaire can provide relevant information for the researcher. For certain research topics, it is often the only applicable option. The disadvantage is the subjectivity of the researcher and the interviewee, which may not require a face-to-face activity and sometimes the lack of honesty. The first step in creating the questionnaire is to define the range of necessary information in accordance with the research objectives, and then to organize the questions into logically and content-related groups. A decision must be made on the method of questioning and the type of questionnaire. Depending on the method of questioning, we set up the order of the topic groups, shape the questions (wording, scales, answer categories, tables, etc.) and finally reveal possible errors during a pilot of the questionnaire. (Parahoo, 2006) & (Lehota, 2001). The processes of defining of the relevant concepts (conceptualization) and determining how to test abstract concepts (operationalization) can help to define the scope of information to be collected in the questionnaire. The development of the

research model also helps the researcher to control the effects of those factors which cannot be covered in the questionnaire or which the research has limited opportunity to examine.

Due to the nature and the number of participants, I chose the self-filling methodology. With the self-filling form, the respondents read, interpret and answer the questions themselves. The disadvantage is that the filling is incomplete in the case of inappropriate questioning or interpretation problems.

The questions can be grouped according to various aspects. Based on the function of the questions, we distinguish between "main questions", which relate directly to the research topic, and "supplementary questions", which help to evaluate the results from the main questions (e.g. demographic data, leading questions). According to the answer options, we distinguish between single- and multiple-answer closed questions, when the appropriate answer(s) can be marked from the predefined answer options. The advantage is that the writing skills of the interviewees are not essential, the number of answers received is greater, the task of the interviewees is simpler, more questions can be asked and the answers are more uniform and easier to process. In the case of closed questions, the principle of completeness is a basic requirement, according to which the entire range of answer options must be covered, if this cannot be fulfilled, the "other" answer option (half-open or half-closed question) can be used at the end of the closed questions.

The prepared questionnaire is the result of my literary analyses, my personal experiences and many conversations with colleagues and professional connections in high-level positions within different Australian organizations.

When using a questionnaire for research, it is important to devote enough time to planning it, since if some error slips in, then there is no possibility to correct it. The most common source of error in questionnaire research is that we do not ask the right questions. In order to answer the formulated research questions, it is very important to include several questions in our questionnaire that provide answers to the hypotheses. Also, significant factor in the questionnaire that how the questions follow one another, since the wrong order of the questions can affect the answers as well. To achieve the best outcome of the questionnaire and be sure that the participants understand the questions and can provide fair answers, it is useful to run a pilot test of the survey within a limited group and apply the feedback to improve on the draft questionnaire.

The pilot test questionnaire was compiled based on the experiences gained during the different conversations and meetings. The pilot questionnaire received several rounds of technical and content review by a smaller working group. The questionnaire was revised based on this feedback. The next step was a pilot to a wider group to identify and fix errors. Three types of errors can be distinguished:

- errors of form: typos, spelling and editing errors,
- errors of content: certain questions cannot be interpreted, unnecessary, possibly missing answer options, and
- logical errors: incoherent question numbering, irrelevant answer options.

During the pilot, I conducted the survey on a smaller participant group similar to the final sample. Based on the pilot survey, there was no need to modify the content, the questions, or question forms and provided answer variation. To analyse results, the

formal transformation of the questionnaire and a tabular matrix format proved to be effective.

In the research, I use the self-filling method with closed questions. In the case of closed questions, respondents can choose from predetermined questions. Two types closed questions were included: a) the alternative yes/no, and b) selective multiple-choice answer. Researchers use closed questions if they want to receive ranked data, know all possible answer options, or if they want to make data processing as simple as possible.

The questionnaire is introduced with the instructions for filling it out. This includes the introduction, the purpose of the questionnaire, instructions on how to fill it out, explanation why it is important to fill it out, the issue of data protection and anonymity, and finally the thank you note. The research questionnaire can be found in “Appendix A”.

Selection of the target group

The starting point of the problem of sampling is that in most cases it is not possible to examine the entire population. Therefore, it is necessary to somehow select a narrower group as a sample from which we can formulate generalizations regarding the larger population. Sampling thus includes the definition and selection of the scope of what is to be observed. The sample is a set of elements, the elements are the basic units about which we collect information, and which serve as the basis of the analysis - usually people.

When taking a sample, it is necessary for the researcher to be sure that the sample represents the basic population. Representativeness means that the overall characteristics

and parameters of the sample closely approximate the same overall characteristics of the population. It is not necessary for the sample to be representative in all respects, it is sufficient if it is limited to characteristics important from the point of view of the research.

The planning of the data collection was based on the objective of being able to draw general conclusions from the collected information about the factors determining the success of the project of the investigated companies. In order to do this, a representative sample, i.e., one that closely approximates the characteristics of the entire population, was needed.

When choosing the target group for the questionnaire survey, one of the main aspects was to be able to compare companies with different sizes and different profiles. Due to my Research topic, I was able to connect with Big 4 audit and consulting service providers, market leaders and local banking organizations, and mid- and smaller companies as well.

When selecting the respondents, the various groups involved the different aspects of a project and the definition of the success needed to be represented. The collected answers to the questionnaire adequately represent the participants in project management, execution, and use of the project results.

Data collection

To ensure conformity and gain a detailed overview of the research, (Bauman, 2015) and (Bowden & Galindo-Gonzalez, 2015) claimed that it is important for the

researcher to explain to participants the research process and the expected benefits to get the engagement of the participant. The lack of research participants to answer the survey questions can put the whole study in jeopardy to reach the required data set and the research result. The creation of the quality data requires all respondents to answer the same questions in the same format and the researcher needs to interpret the responses in the same way (Malterud, et al., 2015).

The researcher needs to avoid collecting edited documents by participants because the edited documents can lose meaning or can lead to exposure to confidentiality violations. The research collected data and assured member controls help to establish a proper understanding and validity of the data collected. According to Yin's data collection methodology during the research, it must be clear and understandable that the researcher, as far as practical, determined and used documents (in my research the returned, not modified questionnaires) that are related to the study, and this assured the trustability and generalizability of the study. (Yin, 2003)

The data collection period of my questionnaire for my dissertation was 6 months long, from July 2023 to December 2023. Respondents were contacted by email and asked them to participate in the research by populating the questionnaire and returning it. For the research, I used my professional and private network and their connections within different Australian organizations.

380 questionaries were sent out and 318 were returned. Participants were higly engaged and keen to know the result, as most of them work in a project environment all year. This is because the sample included internal and external project participants,

clients and stakeholders. Due to the high response rate, the analysis can define the different perspectives of the project members' judgments about project success.

3.7 Data Sorting - Database

The statistical analysis of the data and the further operations with them require that they must first be sorted according to a specific system. By this, we mean that the data is cleaned, placed in data series and tables, and possibly represented on a graph. Sorting so-called qualitative data requires a different procedure and quantitative data requires another. Qualitative data can only be subjected to statistical analysis if they are first coded, assigned a numerical value, and classified into categories. After sorting the data, they are analysed, and various statistical operations are carried out on them.

The data is constantly collected during the research work, and at first, they form some kind of unorganized set, which cannot be clearly seen and analysed, so they must be sorted. This starts with checking the data collection procedure and tool, then continues with cleaning the data and sorting it into data tables and creating a database.

(Yin, 2018) listed these five ways to organize and secure information:

- data operation,
- data preservation,
- data entry,
- study-wide analysis of experimenter notes,
- storing all data on an external storehouse device.

When sorting the data, the first thing to do is to examine and check whether the questionnaire has completed correctly, the answers have been administered correctly, whether there are any data that are inherently incorrect, and whether any information is missing. Verification is important because there may be errors in the data collection method, the tool, and its conduct, which are only revealed when the data are sorted. These can be corrected to some extent. Incorrect answers and data can be excluded from the queue. As soon as it has been decided which data we will retain to work with, the next task is to clean the data. It is often clearly visible in the data without any kind of examination if any of the data is incorrect. They may be incomplete, logically incorrect, and it is possible that a typo occurred in the data. These must be corrected point by point. In doing so, we check whether the obtained data are within the permitted values, and we also check whether there are any logically recognizable errors, duplication or impossible data.

Depending on the method and tool used, the data obtain by cleaning can be in different forms and documents. These must be sorted into data series, and then a data series, data table, or even an entire database must be prepared, which can then be easily used during the analysis.

I will organize the quantitative data into a relatively simpler database, we just need to make sure that all data and information are displayed in it. This database will be the basis for further operations, so all researchers must know the process of its creation and the potential for errors. Data sets created from questions and measurement values will be used as a database according to the following steps: the variables and their associated attributes must be identified. This is based on the fact that we can divide the given topic into measurable categories, the variables have so-called attributes, i.e., "concepts" that can be used to characterize them. In the case of the questionnaire, for

example, the data obtained from the answers show who marked which attribute, and how many respondents chose the given attribute.

After collection, preparation of the data and loading into a statistical software, descriptive statistics and hypothesis testing are run up.

For the data collection and organization, I will use Microsoft Excel and Word are used. For the advanced statistical analysis, computer supported, qualitative data analysis software SSSP (Statistical Package for the Social Sciences) Statistical Software program is used to process, compare and evaluate the collected data. During the analytical process of the received answers, I will prepare different statistical analyses according to various aspects using the SSSP software.

The processing of the questionnaire and handling of the data and answers, during the evaluation will only be processed based on the participants' functions in the project and the time spent at the Australian organization. Participants are not named and they remained anonymous during the whole analysis, evaluation, and presentation.

Data Grouping

After receiving all responses to the questionnaire, the first step was to group the participants to better understand the different roles of the project members for a more meaningful analysis of the responses.

A project usually has 3 different categories of stakeholder:

- Project Management, including
    - Program roles: Steering Committee, Program Sponsor, Program Director, Program Manager, and

    - Project Roles: Project Sponsor, Project Owner, Project Manager, Project Analyst,
- Supporting Roles, including
    - Subject Matter Experts (SMEs),
    - IT department: Developers, System Architects, UAT coordinators,
    - Business Analysts,
    - Vendor employees, and
- Business/End User, the final user of the project outcome

3.8 Data Analysis

After sorting the data, the data analysis begins, the purpose of which is to examine the data sorted in a specified way and make it assessable according to some sorting principle. During the analysis of the quantitative data, we perform the analysis by making the data numerical, usually using a statistical method.

Statistical operations require specialist expertise, so the researcher themselves may not always perform these operations, but may use trained statisticians, and the results obtained in this way would be summarized and analysed by the researcher.

Nowadays, the Excel program and SPSS (Statistical Package for the Social Sciences) are very common and well suited for operations with data. This makes scientific research much easier, since the capacity of the data recorder and analyser includes a large number of the most popular statistical procedures, which we may need during the analysis of the data. These include frequencies, t-tests, correlations, reliability analysis, etc.

For the statistical evaluation of the collected questionnaires, for my doctorate thesis, I used the SSSP statistical software, Microsoft Office Excel and Word programs.

Statistical analysis

The next step in the data evaluation is the statistical analysis. During the analysis, I used different statistical methodologies to examine the characteristics of the collected research sample. The evaluation and the summary of the characteristics were done without naming the respondents to ensure anonymity.

Depending on the structure of the data set collected during sampling and the type of data, I prepared different analyses to present the characteristics of the data and the occurrence rates.

Using IBM SPSS v22 program, I conducted Factor analysis, Linear regression and correlation, Analysis of variance (One-way ANOVA), F-statistic and p-value analysis, Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test.

Factor analysis

Among the multivariate statistical analyses, I first performed a factor analysis in order to create factors describing the project variables and the results achieved.

Factor analysis is used for data compression and data structure exploration. The number of initial variables is combined into factor variables which cannot be directly observed. Factor analysis is a structure-revealing method, which means that there are no predetermined dependent and independent variables, and we seek to reveal the relationships between variables. Factor analysis identifies and examines the relationship between several variables that correlate with each other. The purpose of the method is to control the background variables that cannot be directly observed, the determination of

factors based on correlations between variables. The application of factor analysis has a raison d'être if there is a strong correlation between the original observation variables or certain groups of them. In addition, the results can be interpreted from a practical point of view if the observation variables can be classified into separated groups such that the values are determined by common background variables for each group.

Linear regression and correlation

In the second step of the analyses, I conducted a linear regression and correlation analysis to examine the relationships between the newly identified factors. The nature of the relationship was determined by regression analysis, while the strength and intensity of the relationship was determined by correlation calculation. I performed a significance test for the linear correlation coefficients in order to analyse whether the correlation coefficients differ significantly from each other. That is, whether a significant difference can be demonstrated between the correlation relationships revealed in terms of the success criteria factors and the task-oriented and relationship-oriented success factors.

Bartlett test

The Bartlett test examines whether the variables in the population are uncorrelated. That is, the test determines whether the elements of the correlation matrix outside the main diagonal deviate from zero only by chance. Factor analysis requires that the variables correlate with each other, and preferably as strongly as possible.

Kaiser-Meyer-Olkin- (KMO) measure

The KMO measure is one of the most important metrics for judging how suitable the variables are for factor analysis. The KMO value is the average of the measure of sampling adequacy (MSA) values. While the MSA value applies to individual variables, the KMO applies to all variables simultaneously. The meaning of the KMO indicator can be judged as follows:

KMO value ≥ 0.9 is excellent,

KMO value ≥ 0.8 is very good,

KMO value ≥ 0.7 is adequate,

KMO value ≥ 0.6 moderate,

KMO value ≥ 0.5 weak,

KMO value < 0.5 is unacceptable.

In general, KMO values between 0.8 and 1 indicate the sampling is adequate. KMO values less than 0.6 indicate the sampling is not adequate and that remedial action should be taken. In contrast, others set this cut-off value at 0.5.

Analysis of variance (ANOVA)

In the course of the investigation, I further used analysis of variance (ANOVA) to reveal the extent to which the examined variables differ from each other based on the individual factor value averages. For those cases where a significant difference was found in the factor value averages of the investigated areas during the variance analysis, I performed a discriminant analysis, with the help of which it can be estimated whether the given variables really distinguish the groups of dependent variables from each other or not.

One-way ANOVA (analysis of variance) is a statistical method used to test for significant differences between the means of groups of data. It is usually used in

experimental research to compare the effects of different treatments or interventions on a particular outcome.

One-way ANOVA is a statistical test used to determine whether there are significant differences between the means of two or more independent groups. Used to test the null hypothesis that all group means are equal against the alternative hypothesis that at least one mean is different from the others.

The basic idea of ANOVA is to partition the total variability in the data into two components: variation between groups (due to the treatment) and variation within each group (due to random variation and individual differences). The ANOVA test calculates the F-statistic, which is the ratio of between-group and within-group variation.

If the F-statistic is large enough and the associated p-value is below a predetermined significance level, e.g.: 0.05, then this indicates that there is strong evidence that at least one of the group means is significantly different from the rest.

One-way ANOVA assumes that the data are normally distributed and that the group standard deviations are equal. If these assumptions are not met, alternative non-parametric tests can be used instead.

ANOVA must have several assumptions for the results to be valid and reliable. These assumptions are:

Normal: The dependent variable must be normally distributed within each group. This can be checked using histograms, normal probability plots or statistical tests such as the Shapiro-Wilk test.

Homogeneity of variance: The variance of the dependent variable must be approximately the same in all groups. This can be checked using statistical tests such as Levene's test or Bartlett's test.

Independence: The observations of each group must be independent of each other. This means that the values of one group cannot be related to or dependent on the values of the other group.

Random sampling: The groups must be formed by random sampling. This ensures that the results can be generalized to the larger population.

It is important to check these assumptions before performing ANOVA, as violating them can lead to inaccurate results and incorrect conclusions. If one or more assumptions are violated, alternative tests such as non-parametric tests can be used instead.

F-statistic and p-value

The F-statistic measures the ratio of between-group variance to within-group variance. E.g.: If the variance between groups is the same as within groups, then this means that the groupings chosen are not an explanatory factor. E.g. suppose people who have been at the company longer are in one group (A) and those for a shorter time are in another group (B). Suppose the in-group variance for each of A and B is the same as the between-group variance, i.e. between A and B. Then this means that how long the team member has been at the company is not a significant factor affecting project success criteria.

The p-value shows the probability of obtaining an F-statistic as extreme as the one observed if the null hypothesis is true. A small p-value (less than the chosen significance level, usually 0.05) suggests strong evidence against the null hypothesis, indicating that there is a significant difference between the means of at least two groups.

3.9 Research Design Limitations

Like every other research exercise, unfortunately this one also has some limitations as well. All accounted possible and actual challenge and issues are listed and explained below.

Data limitation

The number of units of analysis used in this study is determined by the type of research question being investigated. It is important to note that if the sample is too small, finding significant relationships in the data is challenging, as statistical tests usually require a larger sample size to ensure fair representation, and smaller sample size can be limiting.

The research data was collected only from the questionnaire. However, based on the available research methodologies, some other data collection methods, such as interviewing the participants, may have different answers to the research questions. Performing interviews is very time-consuming, even if more detailed information can be obtained. It is only practical to use research methods that are conducive to large volumes, such as multiple-choice questionnaires

Lack of data or reliable data will almost certainly necessitate limiting the scope of the research or the sample size or may be a significant obstacle to identifying the sample and the relevant relationship.

An impactful limitation of the study is the sample size, specifically when we compare the overall employees' number within these Australian organizations to the returned survey number – 318 participants' answers to the 380 sent surveys. The participants of the research arrived mostly from "Big 4" consulting and banking

industries with different cultural, educational and career backgrounds. The overall employees' number of these organizations is more than 200.000 people. The results of this research may not be generalized to represent all employees working in the same organization. More participants and more responses provides a larger data set and a more representative result. Also, the data collection period may be considered to extend from 6 months to a year, providing enough time to organise campaigns and workshops to reach out to more people and achieve a larger sample and database.

Lack of prior research on the topic

Fortunately, I was able to find previous research studies and citing these studies forms the basis of the above literature review and helps understand the research topic of this dissertation. The available studies and relevant research linked to the topic of this dissertation are well documented and provide useful knowledge in digital format.

Data Access

My research does not require interviewing particular individuals or a highly specific group, but we faced the problem of limited access to participants. Due to limited access, an extended participant involvement and data collection period may be needed to reorganize the research and achieve more accurate research results.

3.10 Ethics in scientific research

Scientific research is conducted according to canonized rules. The research stages and the results of the research need to be accessible to the public. These results can determine the development and daily practice of a profession. Today, everywhere in the

world, research has become a source of livelihood, a craft, and through information it has even become a tool of power. Research can be caught in the crossfire of different interests, thereby increasing the temptation to deviate from the standards of valid scientific research. Researchers and scientific professionals have a great responsibility in the field of observing and enforcing these standards.

Research needs to meet the requirements of research philosophy, research theory and many other related disciplines, as well as the professional rules of the researched topic. In addition to all of this, ethical requirements must also be me.

CHAPTER IV:
RESEARCH RESULTS

During my research and thesis writing, I used Microsoft Excel, Word, and IBM SPSS v22 programs to process, evaluate and statistically analyse the answered questionnaires. The processing of the questionnaire and the handling of the data during the evaluation were only processed on the basis of the functions performed by the respondents in the project and the time they spent at the Australian organization and they were not named and cannot be identified.

During the processing of the received answers, I prepared various statistical analyses. Using IBM SPSS v22 program, I conducted the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test, main component analysis, and analysis of variance (One-way ANOVA).

There were no ambiguous statements in the questionnaire, and I did not influence the respondents' opinions by wording the questions. During the questionnaire research, I

used multiple-choice, closed question forms. It was done using a self-completion method, that is, the respondents decided when they would fill in and return the questionnaire during the research period. During the research, I contacted the selected participants by email, no personal meeting took place in connection with the questionnaire.

After receiving all the answers to the questionnaire, the first step I made was the grouping of the different participants. The reason being to understand better the different parts of the project members and make a better analysis of the result.

A project usually has 4 different parties:

- Project Management, including Program and Project level roles,
- IT department including Developers, System organizers, System Architectures, Vendor employees,
- Supporting Roles, including Business Analysts, Subject Matter Experts (SMEs)
- Business Users, the final users of the project outcome

Key areas involved in the research	***Sent surveys***	***Returned surveys***	***Returned %***
Project Management	*100*	*96*	*96,00%*
End User	*120*	*100*	*83,33%*
IT Department	*60*	*38*	*63,33%*
Business Analyst	*100*	*84*	*84,00%*
SUM	***380***	***318***	***83,68%***

Table 17: Research participants summary

(own compilation)

A total of 318 completed questionnaires were returned, which shows a participation rate of 83,68% in my research. To the greatest extent, the Project Managers and End Users gave their answers, while on the Technology side, there was less participation from the IT Department (programming, technical background) and Business Analysts. These participation numbers are representing my professional experience – usually the End Users and the Project Management are highly interested in delivering a project successfully, while the IT and BA usually support the project and might be overloaded with several other projects or BAU work.

Due to the nature of the different roles and from the analysis perspective, results are in 3 main groups: Project Management, End User and IT+BA (merging the IT Department and Supporting Roles category). Throughout the data analysis, result evaluation and presentation these 3 main groups are retained.

4.1 Analysis of success criteria

When selecting the participants in the research, the inclusion of an analysed number of members of the various professional groups and aspects related to the areas participating in a project was considered. This was to get an objective assessment of whether the first assumption is true, based on the answers and opinions of the research participants.

1. Assumption

"In the examined Australian company, a difference can be shown in the judgment of the elements describing the success criteria of the project members based on their role in the project."

During the literature review, I identified and used for my research the following 10 success criteria: To meet deadlines, To meet scope, To meet budget, Satisfaction of the members of the project, Support of the organization / other department, Flexibility, Seamless handover, Technical performance, Speed of information flow, Quality of information.

I first divided the responses to the success criteria (see Appendix I. - Questionnaire question group 7) from the project members who held different positions in the research into 3 main groups – mentioned above – based on the positions they held during their projects. Namely: End User, IT+BA, and Project Management.

Using IBM SPSS, the answers were subjected to main component analysis per position.

END USER

Based on the expected correlation results, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test were justified. The expected value is that the KMO value is above 0.5 and the Bartlett value is below 0.05 (less significance), which shows that the elements are suitable for main component analysis.

During the tests, 4 success criteria were identified as not suitable for main component analysis. These were: To meet deadlines, To meet scope, To meet budget, Technical performance.

By omitting the specified unsuitable success criteria, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test gave the following result for the remaining 6 success criteria. These were: Satisfaction of the members of the project, Support of the organization / other department, Flexibility, Seamless handover, Speed of information flow, Quality of information.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*,712*
Bartlett's Test of Sphericity	*Approx. Chi-Square*	*119,728*
	df	*15*
	Sig.	*,000*

Table 18: End User Success Criteria – KMO & Bartlett test

(own compilation)

It can be read from the above table that the value of the KMO measure is 0.712, while the result of Bartlett's test is still 0.000, which means that the selected variables are fully suitable for main component analysis.

As a result of the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test for the identified 6 success criteria after the rotation matrix analysis and the 6 success criteria were divided into 2 groups for further analysis, as shown here:

Main Components	***Variables***	***Variables' factor weight %***
End User – Success criteria *1st group*	*Satisfaction of the members of the project*	*0,925*
	Support of the organization / another department	*0,921*
	Flexibility	*0,893*
	Seamless handover	*0,751*
End User – Success	*Speed of information flow*	*0,955*

criteria 2nd group	*Quality of information*	*0,938*

Table 19: End User Success Criteria – Main components and variables

(own compilation)

IT & BA

Based on the expected correlation results, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test were justified. The expected value is that the KMO value is above 0.5 and the Bartlett value is below 0.05 (less significance), which shows that the elements are suitable for main component analysis.

During the tests, 4 success criteria were identified as not suitable for main component analysis. These were: To meet scope, To meet budget, Seamless handover, Technical performance.

By omitting the above specified unsuitable success criteria, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test gave the following result for the remaining 6 success criteria. These were: To meet deadlines, Satisfaction of the members of the project, Support of the organization / other department, Flexibility, Speed of information flow, Quality of information.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*,707*
Bartlett's Test of Sphericity	*Approx. Chi-Square*	*82,738*
	df	*15*
	Sig.	*,000*

Table 20: IT & BA Success Criteria – KMO & Bartlett test

(own compilation)

It can be read from the table that the value of the KMO measure is 0.707, while the result of Bartlett's test is still 0.000, that is, the selected variables are fully suitable for main component analysis.

As a result of the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test for the identified 6 success criteria after the rotation matrix analysis and the 6 success criteria were divided into 2 groups for further analysis, as shown here:

Main Components	***Variables***	***Variables' factor weight %***
IT & BA – Success criteria *1st group*	*Satisfaction of the members of the project*	*0,937*
	Support of the organization / another department	*0,931*
	Flexibility	*0,881*
IT & BA – Success criteria *2nd group*	*Speed of information flow*	*0,914*
	Quality of information	*0,904*
	To meet deadlines	*0,849*

Table 21: IT & BA Success Criteria – Main components and variables

(own compilation)

PROJECT MANAGEMENT

Based on the expected correlation results, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test were justified. The expected value is that the KMO value is above 0.5 and the Bartlett value is below 0.05 (less significance), which shows that the elements are suitable for main component analysis.

During the tests, 5 success criteria were identified as not suitable for main component analysis. These were: To meet deadlines, Seamless handover, Technical performance, Speed of information flow, Quality of information.

By omitting the specified unsuitable success criteria, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test gave the following result for the remaining 6 success criteria. These were: To meet scope, To meet budget, Satisfaction of the members of the project, Support of the organization / other department, Flexibility.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*,665*
Bartlett's Test of Sphericity	*Approx. Chi-Square*	*56,092*
	df	*10*
	Sig.	*,000*

Table 22: Project Manager Success Criteria – KMO & Bartlett test

(own compilation)

It can be read from the table that the value of the KMO measure is 0.665, while the result of Bartlett's test is still 0.000, which means that the selected variables are fully suitable for main component analysis.

As a result of the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test for the identified 5 success criteria after the rotation matrix analysis and the 5 success criteria were divided into 2 groups for further analysis, as shown here:

Main Components	***Variables***	***Variables' factor weight %***

Project Manager – Success criteria 1st group	*Satisfaction of the members of the project*	*0,933*
	Support of the organization / another department	*0,914*
	Flexibility	*0,838*
Project Manager – Success criteria 2nd group	*To meet budget*	*0,892*
	To meet deadlines	*0,875*

Table 23: Project Manager Success Criteria – Main components and variables

(own compilation)

Summary of the analysis of the success criteria by position

The main components determined based on the tests carried out are summarized in the table below and the common success criteria between the different research groups are highlighted:

Main Components	***End User***	***IT+BA***	***Project Management***
Success criteria 1st group	*Flexibility*	*Support of the organization / another department*	*Satisfaction of the members of the project*
	Satisfaction of the members of the project	*Flexibility*	*Support of the organization / another department*
	Support of the organization / another department	*Satisfaction of the members of the project*	*Flexibility*
	Seamless handover		
Success criteria 2nd group	*Speed of information flow*	*Speed of information flow*	*To meet budget*
	Quality of information	*Quality of information*	*To meet deadlines*

		To meet deadlines	

Table 24: Success Criteria – Main components and variables summary

(own compilation)

Based on Success Criteria – Main components and variables summary table above, it can be established that, based on the positions held during the projects, there are common criteria among the main component analyses of the success criteria. These criteria are flexibility, the satisfaction of the project members, and the organizational support of the project. It is also an interesting observation that the Quality of Information and To meet deadlines can also be found in the main component groups in the case of two investigated groups. The quality of information is important to the End User and BA+IT groups. This can be explained intuitively because of the nature of their work, as they are both sources and users of information. Adherence to the deadlines is important for the Project Management (Sponsor, Program Director/Manager, Project Manager) and the BA+IT groups. Again, this makes intuitive sense because they work according to a specific schedule and allocate labour resources according to schedule constraints.

4.2 Analysis of success factors

When selecting the participants in the research, the inclusion of an analysed number of the members of the various professional groups and aspects related to the areas participating in a project influenced my decision. As a result, I expected that I could get an objective picture of the second assumption based on the answers and opinions of the participants in the research.

2. Assumption

"In the examined Australian company, a difference can be shown in the judgment of the elements describing the success factors of the project members based on their role in the project."

During the literature review, I identified and used for my research the following success factors: Communication of project members, Management support, Compliance with project schedule, Communication with end-users, Project members' personality, Technical achievement / performance, Adoption of the results, Control, Feedback, Finding a solution, External circumstances.

I first divided the responses to the success criteria (see Appendix I. - Questionnaire question group 8) from the project members who held different positions in the research into 3 main groups – mentioned above – based on the positions they held during their projects. Namely: End User, IT+BA, and Project Management.

Using IBM SPSS, the answers were subjected to main component analysis per position.

END USER

Based on the expected correlation results, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test were justified. The expected value is that the KMO value is above 0,5 and the Bartlett value is below 0,05 (less significance), which shows that the elements are suitable for main component analysis.

During the tests, 6 success factors were identified, as not suitable for main component analysis. These were: Communication of project members, Management support, Communication with end-users, Technical achievement / performance, Feedback, External circumstances.

By omitting the specified unsuitable success factors, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test gave the following result for the remaining 5 success factors. These were: Compliance with project schedule, Project members' personality, Adoption of the results, Control, Finding a solution.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*,623*
Bartlett's Test of Sphericity	*Approx. Chi-Square*	*103.641*
	df	*10*
	Sig.	*,000*

Table 25: End User success factors – KMO & Bartlett test

(own compilation)

It can be read from the table that the value of the KMO measure is 0,623, while the result of Bartlett's test is still 0,000, which means that the selected variables are fully suitable for main component analysis.

As a result of the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test for the identified 5 success factors after the rotation matrix analysis and the following 2 groups were created for further analysis:

Main Components	***Variables***	***Variables' factor weight %***
End User – Success Factors *1st group*	*Project members' personality*	*0,902*
	Adoption of the results	*0,896*
	Finding a solution	*0,891*
End User – Success Factors *2nd group*	*Compliance with project schedule*	*0,965*
	Control	*0,940*

Table 26: End User Success Factors – Main components and variables

(own compilation)

IT & BA

Based on the expected correlation results, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test were justified. The expected value is that the KMO value is above 0,5 and the Bartlett value is below 0,05 (less significance), which shows that the elements are suitable for main component analysis.

During the tests, 5 success factors were identified as not suitable for main component analysis. These were: Communication of project members, Compliance with project schedule, Project members' personality, Technical achievement / performance, Adoption of the results.

By omitting the specified unsuitable success factors, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test gave the following result for the remaining 6 success factors. These were: Management support, Communication with end-users, Control, Feedback, Finding a solution, External circumstances.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*,684*
Bartlett's Test of Sphericity	*Approx. Chi-Square*	*52,587*
	df	*15*
	Sig.	*,000*

Table 27: IT & BA Success Factors – KMO & Bartlett test

(own compilation)

It can be read from the table that the value of the KMO measure is 0,684, while the result of Bartlett's test is still 0,000, that is, the selected variables are fully suitable for main component analysis.

As a result of the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test for the identified 6 success factors after the rotation matrix analysis and the following 2 groups were created for further analysis:

Main Components	***Variables***	***Variables' factor weight %***
IT & BA – Success Factors *1st group*	*Management support*	*0,871*
	External circumstances	*0,827*
	Control	*0,753*
	Finding a solution	*0,710*
IT & BA – Success Factors *2nd group*	*Feedback*	*0,883*
	Communication with end-users	*0,877*

Table 28: IT & BA Success Factors – Main components and variables

(own compilation)

PROJECT MANAGEMENT

Based on the expected correlation results, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test were justified. The expected value is that the KMO value is above 0.5 and the Bartlett value is below 0.05 (less significance), which shows that the elements are suitable for main component analysis.

During the tests, 6 success factors were identified as not suitable for main component analysis. These were: Compliance with project schedule, Communication with end users, Personality of project members, Technical achievement / performance, Adoption of the results, External circumstances.

By omitting the specified unsuitable success factors, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test gave the following result for the remaining 5 success factors. These were: Communication of project members, Management support, Control, Feedback, Finding a solution.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*,665*
Bartlett's Test of Sphericity	*Approx. Chi-Square*	*56,092*
	df	*10*
	Sig.	*,000*

Table 29: Project Manager Success Factors – KMO & Bartlett test

(own compilation)

It can be read from the table that the value of the KMO measure is 0,665, while the result of Bartlett's test is still 0,000, which means that the selected variables are fully suitable for main component analysis.

As a result of the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test for the identified 5 success factors after the rotation matrix analysis and the following 2 groups were created for further analysis:

Main Components	***Variables***	***Variables' factor weight %***

Project Management – Success Factors 1st group	*Control*	*0,894*
	Management support	*0,816*
	Finding a solution	*0,688*
Project Management – Success Factors 2nd group	*Feedback*	*0,909*
	Communication of project members	*0,874*

Table 30: Project Manager Success Factors – Main components and variables

(own compilation)

Summary of the analysis of the success factors by position

The main components determined based on the tests carried out are summarized in the table below and the common success factors between the different research groups are highlighted:

Main Components	***End User***	***IT+BA***	***Project Management***
Success Factors 1st group	*Project members' personality*	*Management support*	*Control*
	Adoption of the results	*External circumstances*	*Management support*
	Finding a solution	*Control*	*Finding a solution*
		Finding a solution	
Success Factors 2nd group	*Compliance with project schedule*	*Feedback*	*Feedback*
	Control	*Communication with end-users*	*Communication of project members*

Table 31: Success Factors – Main components and variables summary

(own compilation)

Based on the Success Factors – Main components and variables summary table above, it can be concluded that, based on the positions held during the projects, there is only one common factor among the main component analyses of success factors which is Finding a solution. All other success-factor components can be found in two groups, but all three have only the mentioned Finding Solutions success factor. Another interesting observation is the Management support, the Feedback and the Communication with end-users in the case of two investigated groups, they can also be found in the main component groups.

The Management support of the project success factor is important for the Project Manager and the BA+IT groups, because they plan, allocate and schedule tasks in accordance with the strategic decisions from the senior managers. As a result, it is important that managers support specific projects.

Feedback success factor is important for the Project Management (Sponsor, Program Director/Manager, Project Manager) and the BA+IT groups, because in the case of both groups, improvements can be continued, and the next steps can be planned as a result of the feedback received.

4.3 The effect of greater service years on the success criteria

When selecting the participants in the research, the inclusion of an analysed number of the members of the various professional groups and aspects related to the areas participating in a project influenced my decision. As a result, I expected that I could get an objective picture of the third assumption based on the answers and opinions of the participants in the research.

3. Assumption

"In the examined Australian company, there is a difference in the assessment of the success criteria regarding the service years at the examined organizations."

During the literature review I identified and used for my research the following success criteria: To meet the deadlines, To meet scope, To meet budget, Satisfaction of the members of the project, Support of organization / other department, Flexibility, Seamless handover, Technical performance, Speed of information flow, Quality of information.

Before starting the detailed analysis, I made a summary to see a very high level of the different project members movement generally. The result is contained in the table below.

		How long has he/she been with the company?		***Total***
		Since 2020 or prior	*Since 2021 or later*	
What was your function during the project??	*Project Management*	*48*	*48*	*96*
	Business Analyst	*48*	*52*	*100*
	IT Department	*32*	*5*	*38*
	End User	*53*	*32*	*84*
	Total	*180*	*137*	*318*

Table 32: Project functions and service years - summary

(own compilation)

It can be read from the table that there were no real changes in the IT department, a total of 5 new colleagues arrived after January 1, 2021. However, for Business Analyst and End User users, the number of employees increased by the same or almost the same number, while no change can be observed in the number of Project Managers.

In the following, I subjected the answers to main component analysis using the SPSS program.

Based on the expected correlation results, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test were justified. The expected value is that the KMO value is above 0,5 and the Bartlett value is below 0,05 (less significance), which shows that the elements are suitable for main component analysis.

During the tests, 4 success criteria were identified as not suitable for main component analysis. These were: To meet the scope, To meet the budget, Seamless handover, Technical performance.

By omitting the unsuitable success criteria, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test gave the following result for the remaining 6 success criteria. These were: To meet deadlines, Satisfaction of the members of the project, Support of organization / other department, Flexibility, Speed of information flow, Quality of information.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*,692*
Bartlett's Test of Sphericity	*Approx. Chi-Square*	*309,636*
	df	*15*
	Sig.	*,000*

Table 33: All functions & service years success criteria – KMO & Bartlett test

(own compilation)

It can be read from the table that the value of the KMO measure is 0,692, while the result of Bartlett's test is still 0,000, which means the selected variables are suitable for main component analysis.

As a result of the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test for the identified 6 success criteria after the rotation matrix analysis, the following 2 groups were created for further analysis:

Main Components	***Variables***	***Variables' factor weight %***
All functions & service years – Success Criteria 1st group	*Support of organization / another department*	*0,936*
	Flexibility	*0,933*
	Satisfaction of the members of the project	*0,914*
All functions & service years – Success Criteria 2nd group	*Speed of information flow*	*0,930*
	Quality of information	*0,890*
	To meet deadlines	*0,818*

Table 34: All functions & service years success criteria – Main components and variables

(own compilation)

After identifying the main components, I performed a One-Way ANOVA for both groups to examine whether the opinion of the pre-2020 group differs from the post-2021 group based on the research sample.

During the One-Way ANOVA test, the effect of work experience is displayed by the significance result. If the significance value is below 0,05, then the assumption is proven. I performed the test for both main component groups.

REGR factor score 2 for analysis 1

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	*,130*	*1*	*,130*	*,128*	***,722***
Within Groups	*66,870*	*66*	*1,013*		
Total	*67,000*	*67*			

Table 35: All functions & service years success criteria 1st group – One-way Anova analysis

(own compilation)

REGR factor score 2 for analysis 2

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	*2,290*	*1*	*2,290*	*2,336*	***,131***
Within Groups	*64,710*	*66*	*,980*		
Total	*67,000*	*67*			

Table 36: All functions & service years success criteria 2nd group – One-way Anova analysis

(own compilation)

As the results of the study resulted in a high significance value for both group analysis (0,722 for the first group and 0,131 for the second group), this difference cannot be demonstrated. That is, there is no difference between the project members starting before or after 2021 regarding the success criteria based on the service years at the examined organizations.

4.4 The effect of greater service years on the success factors

When selecting the participants in the research, the inclusion of an analysed number of the members of the various professional groups and aspects related to the areas

participating in a project influenced my decision. As a result, I expected that I could get an objective picture of the fourth assumption based on the answers and opinions of the participants in the research.

4. Assumption

"In the examined Australian company, there is a difference in the assessment of the success factors regarding the service years at the examined organizations."

During the literature review I identified and used for my research the following success factors: Communication of project members, Management support, Compliance with project schedule, Communication with end-users, Project members' personality, Technical achievement / performance, Adoption of the results, Control, Feedback, Finding a solution, External circumstances.

Before starting the detailed analysis, I made a summary to see a very high level of the different project members movement generally. The result is contained in the table below.

		How long has he/she been with the company?		***Total***
		Since 2020 or before	*Since 2021 or later*	
What was your function during the project??	*Project Management*	*48*	*48*	*96*
	Business Analyst	*48*	*52*	*100*
	IT Department	*32*	*5*	*38*

End User	*53*	*32*	*84*
Total	*180*	*137*	*318*

Table 37: Project functions and service years - summary

(own compilation)

It can be read from the table that there were no real changes in the IT department, a total of 5 new colleagues arrived after January 1, 2021. However, for Business Analyst and End User users, the number of employees increased by the same or almost the same number, while no change can be observed in the number of Project Managers.

In the following, I subjected the answers to main component analysis using the SPSS program.

Based on the expected correlation results, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test were justified. The expected value is that the KMO value is above 0,5 and the Bartlett value is below 0,05 (less significance), which shows that the elements are suitable for main component analysis.

During the tests, 4 success factors were identified as not suitable for main component analysis. These were: Compliance with project schedule, Project members' personality, Technical achievement / performance, Adoption of the results.

By omitting the specified unsuitable success factors, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test gave the following result for the remaining 7 success factors. These were: Communication of project members, Management support, Communication with end-users, Control, Feedback, Finding a solution, External circumstances.

It can be read from the table that the value of the KMO measure is 0,725, while the result of Bartlett's test is still 0,000, which means that the selected variables are fully suitable for main component analysis.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*,725*
Bartlett's Test of Sphericity	*Approx. Chi-Square*	*233,246*
	df	*21*
	Sig.	*,000*

Table 38: All functions & service years success factors – KMO & Bartlett test

(own compilation)

As a result of the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test for the identified 7 success factors after the rotation matrix analysis, the following 2 groups were created for further analysis:

Main Components	***Variables***	***Variables' factor weight %***
All functions & service years – Success Factors 1st group	*Management support*	*0,870*
	Control	*0,817*
	Finding a solution	*0,729*
	External circumstances	*0,709*
All functions & service years – Success Factors 2nd group	*Feedback*	*0,919*
	Communication with end-users	*0,749*
	Communication of project members	*0,721*

Table 39: All functions & service years success factors – Main components and variables

(own compilation)

After identifying the main components, I performed a One-Way ANOVA for both groups to examine whether the opinion of the pre-2020 group differs from the post-2021 group based on the research sample.

During the One-Way ANOVA test, the effect of work experience is displayed by the significance result. If the significance value is below 0,05, then the assumption is proven. I performed the test for both main component groups.

REGR factor score 2 for analysis 1

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	*,155*	*1*	*,155*	*,153*	***,697***
Within Groups	*66,845*	*66*	*1,013*		
Total	*67,000*	*67*			

Table 40: All functions & service years success factors 1st group – One-way Anova analysis

(own compilation)

REGR factor score 2 for analysis 2

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	*,000*	*1*	*,000*	*,000*	***,983***
Within Groups	*67,000*	*66*	*1,015*		
Total	*67,000*	*67*			

Table 41: All functions & service years success factors 2nd group – One-way Anova analysis

(own compilation)

As the results of the study resulted in a high significance value for both studies which are 0,697 for the first group and 0,983 for the second group), this difference cannot be demonstrated. That is, there is no difference between the project members starting before or after 2021 regarding the success factors based on the service years at the examined organizations.

4.5 Conclusion

Based on the results of the factor analysis within the examined Australian organizations, we can state regarding to the success criteria and success factors:

- There are three common success criteria based on the positions held during the projects (Project Management, IT & BA, End User) which have impact on the project success. These criteria are (in order based on the Variables' factor weight %):
  - Satisfaction of the project members,
  - Organizational support of the Project, and
  - Flexibility.

It is also an interesting observation that the To meet deadlines and To meet budget are relevant only for the Project Management group, while the IT & BA and the End User group prefers the Speed and the Quality of information.

- There is only one common success factor based on the positions held during the projects (Project Management, IT & BA, End User) which have impact on the project success. This factor is the Finding a solution.

It is also an interesting observation that the Management Support, Control, Feedback and Communication with the End User also play relevant role within the IT & BA and the Project Management group to define a project success.

After identification of the main component and the One-Way ANOVA test, we can state regarding the success criteria and success factors connection to the greater service years of the project members within the examined Australian organizations:

- The effect of greater service years of the project members analysis outcome has resulted in a high significance value for the group analysis, which are0,722 for the first group and 0,131 for the second group compared with the expected significance value to be below 0,05. Therefore, it was not demonstrated that there is a difference in the assessment of the success criteria between the project members starting before or after 2021 within the examined Australian organizations.
- The effect of greater service years of the project members analysis outcome has resulted in a high significance value for the group analysis. That is, 0,697 for the first group and 0,983 for the second group compared with the expected significance value to be below 0,05. Therefore, it was not demonstrated that there is a difference in the assessment of the success factors between the project members starting before or after 2021 within the examined Australian organizations.

CHAPTER V:

VERIFICATION OF THE ASSUMPTIONS

5.1 Discussion of the Results

The goal of my doctorate research was to determine, in the case of different Australian organizations' projects, how the positions held by the participants in the project have an impact on their judgement of the project, and what their success criteria and success factors are. Furthermore, I examined whether a greater work experience within the examined Australian organization has or does not have an impact on the employees' opinion of success criteria or success factors.

The success of a project can have many factors and criteria. (Szabó & Dancsecz, 2009) Such as:

- Project **success factors** are circumstances, facts and influences that determine the outcome of the project and thereby contribute to its success. (Dancsecz, 2008)
- The project **success criteria** are requirements, standards and criteria on the basis of which the project's results and success are judged and evaluated. (Dancsecz, 2008)

With other words success factors are about the inputs that drive success or failure (Fortune & White, 2006), and success criteria are about the outputs on which we judge the project as a success or failure. (Cooke-Davis, 2002)

During the dissertation, based on the statistical and econometric analysis of the collected data as a result of the questionnaire survey, I determined the inputs describing the project success factors and success criteria of the 3 groups of project participants involved in the projects (Project Management, IT+BA, End User). In the next step, I

examined the existence and intensity of the correlations between the identified project success factors and success criteria. To investigate this, I performed a linear regression and correlation analysis for the success factor and success criteria created during the factor analysis. In the course of the thesis, I also examined the impact of the experiences of the employees employed in the investigated organizations on the project success factors and success criteria.

The first and second questions and hypotheses of the research were formulated in relation to the determination of the project success factors and success criteria within the examined Australian organization, which were identified and verified during the factor analysis. The third and fourth questions and hypotheses of the research investigated the existence of correlations between the greater service years of the project members and the identified success factor and success criteria and to support this I conducted linear regression and correlation analysis as well.

5.2 Discussion of the Research Question One

1. Question

Is there a difference in the opinion of the project members due to their role in the project in judging the success criteria?

In order to answer the above research question of my doctorate dissertation, I formulated the following assumption.

1. Assumption

"In the examined Australian company, a difference can be shown in the judgment of the elements describing the success criteria of the project members based on their role in the project."

During the analyses, based on the expected correlation results, it was justified to perform the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test. From the obtained results, it was established that the values according to the KMO correspond to the expected value required for the research and the result of the Bartlett's test also had a suitable value, so the selected variables were suitable for main component analysis.

To verify the assumption, I primarily conducted a main component analysis so that the existing variables could be grouped. The grouping required several tests, but as a result, two groups were created for the 3 project roles groups formed due to organizational overlaps.

The main components are summarized in the table below:

Main Components	***End User***	***IT+BA***	***Project Management***
Success criteria 1st group	*Flexibility*	*Support of the organization / another department*	*Satisfaction of the members of the project*
	Satisfaction of the members of the project	*Flexibility*	*Support of the organization / another department*
	Support of the organization / another department	*Satisfaction of the members of the project*	*Flexibility*
	Seamless handover		
Success criteria 2nd group	*Speed of information flow*	*Speed of information flow*	*To meet budget*
	Quality of information	*Quality of information*	*To meet deadlines*
		To meet deadlines	

Table 42: Success Criteria – Main components and variables summary

(own compilation)

Based on Success Criteria – Main components and variables summary table above, it can be established that, there are common criteria among the main component analyses of the success criteria. These criteria are Flexibility, The satisfaction of the project members, and The organizational support of the project. As a result of the investigation, it can be concluded that these success criteria are the same amongst the 3 project groups, therefore the assumption has been refuted.

1st Thesis

Based on the research analysis the thesis of the 1st Assumption is:

*"In the examined Australian company, a difference **cannot** be shown in the judgment of the elements describing the success criteria of the project members based on their role in the project."*

5.3 Discussion of Research Question Two

2. Question

Is there a difference in the opinion of the project members due to their role in the project in judging the success factors?

In order to answer the above research question of my doctorate dissertation, I formulated the following assumption.

2. Assumption

"In the examined Australian company, a difference can be shown in the judgment of the elements describing the success factors of the project members based on their role in the project."

During the analyses, based on the expected correlation results, it was justified to perform the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test. From the obtained results, it could be established that the values according to the KMO correspond to the expected value required for the research and the result of the Bartlett's test also had a suitable value, so the selected variables were suitable for main component analysis.

To verify the assumption, I primarily conducted a main component analysis so that the existing variables could be grouped. The grouping required several tests, but as a result, two groups were created for the 3 project roles groups formed due to organizational overlaps.

The main components are summarized in the table below:

Main Components	***End User***	***IT+BA***	***Project Management***
Success Factors 1st group	*Project members' personality*	*Management support*	*Control*
	Adoption of the results	*External circumstances*	*Management support*
	Finding a solution	*Control*	*Finding a solution*
		Finding a solution	
Success Factors 2nd group	*Compliance with project schedule*	*Feedback*	*Feedback*
	Control	*Communication with end-users*	*Communication of project members*

Table 43: Success Factors – Main components and variables summary

(own compilation)

Based on the Success Factors – Main components and variables summary table above, it can be concluded that, based on the positions held during the projects, there is only one common factor among the main component analyses of success factors - Finding a solution. As a result of the investigation, it can be concluded that this success factor is the same amongst the 3 project groups, therefore the assumption has been refuted.

2nd Thesis

Based on the research analysis the thesis of the 2nd Assumption is:

*"In the examined Australian company, a difference **cannot** be shown in the judgment of the elements describing the success factors of the project members based on their role in the project."*

5.4 Discussion of Research Question Three

3. Question

Is there a difference in the opinion of the project members due to their greater service years at the examined organizations in judging the success criteria?

In order to answer the above research question of my doctorate dissertation, I formulated the following assumption.

3. Assumption

"In the examined Australian company, there is a difference in the assessment of the success criteria regarding greater service years at the examined organizations."

Before started the detailed analysis, I made a summary to see at high level of the difference between project members' years of service at the organisation.

During the analyses, based on the expected correlation results, it was justified to perform the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test. From the obtained results, it could be established that the values according to the KMO correspond to the expected value required for the research and the result of the Bartlett's test also had a suitable value, so the selected variables were suitable for main component analysis.

Main Components	***Variables***	***Variables' factor weight %***
All functions & service years – Success Criteria 1st group	*Support of organization / another department*	*0,936*
	Flexibility	*0,933*
	Satisfaction of the members of the project	*0,914*
All functions & service years – Success Criteria 2nd group	*Speed of information flow*	*0,930*
	Quality of information	*0,890*
	To meet deadlines	*0,818*

Table 44: All functions & service years success criteria – Main components and variables

(own compilation)

After identifying the main components, I performed a One-Way ANOVA for both groups to examine whether the opinion of the pre-2021 group differs from the 2021 and later group based on the research sample.

During the One-Way ANOVA test, the effect of greater work experience is displayed by the significance result. As the results of the analysis has resulted in a high significance value for both group analysis and this difference cannot be demonstrated, therefore we can conclude that there is no difference between the project members before or after 2021 regarding the success criteria based on work experience therefore the assumption has been refuted.

3rd Thesis

Based on the research analysis the thesis of the 3rd Assumption is:

*"In the examined Australian company, there is **no** difference in the assessment of the success criteria regarding greater service years at the examined organizations."*

5.5 Discussion of Research Question Four

4. Question

Is there a difference in the opinion of the project members due to their greater service years at the examined organizations in judging the success factors?

In order to answer the above research question of my doctorate dissertation, I formulated the following assumption.

4. Assumption

"In the examined Australian company, there is a difference in the assessment of the success factors regarding greater service years at the examined organizations."

Before started the detailed analysis, I made a summary to see at high level of the difference between project members' years of service at the organisation.

During the analyses, based on the expected correlation results, it was justified to perform the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test. From the obtained results, it could be established that the values according to the KMO correspond to the expected value required for the research and the result of the Bartlett's test also had a suitable value, so the selected variables were suitable for main component analysis.

Main Components	***Variables***	***Variables' factor weight %***
All functions & service years – Success Factors 1st group	*Management support*	*0,870*
	Control	*0,817*
	Finding a solution	*0,729*
	External circumstances	*0,709*
All functions & service years – Success Factors 2nd group	*Feedback*	*0,919*
	Communication with end-users	*0,749*
	Communication of project members	*0,721*

Table 45: All functions & service years success factors – Main components and variables

(own compilation)

After identifying the main components, I performed a One-Way ANOVA for both groups to examine whether the opinion of the pre-2021 group differs from the 2021 and later group based on the research sample.

During the One-Way ANOVA test, the effect of greater work experience is displayed by the significance result. As the results of the analysis has resulted in a high significance value for both group analysis and this difference cannot be demonstrated, therefore we can conclude that there is no difference between the project members before or after 2021 regarding the success factors based on work experience therefore the assumption has been refuted.

4th Thesis

Based on the research analysis the thesis of the 4th Assumption is:

*"In the examined Australian company, there is **no** difference in the assessment of the success factors regarding greater service years at the examined organizations."*

CHAPTER VI:

RESEARCH CONCLUSION AND RECOMMENDATIONS

My relationship with projects in different financial organizations started almost at the beginning of my career when I participated in the implementation of a new, fully integrated investment software for the first time at my second job. My dissertation is one of the key milestones in the long educational and professional journey since then. My goal with my research was to use different sciences dealing with projects, leadership and management to better understand the characteristics of projects and the factors that can help to lead, manage and deliver successfully of these projects. To conclude my dissertation, I will summarize the results of my research and describe the further research questions that arose during the writing of my doctorate dissertation.

6.1 Summary

I chose the research topic of my Dissertation thesis and examined the project success criteria (requirements, standards) and success factors (circumstances, facts and influences) and their effects based on which projects were called successful by the project members at the examined Australian organization under the given circumstances.

To answer my assumptions and hypotheses, I examined the below 2 questions:

- The different positions held by the project members have or do not have an impact on the employees' opinion of the project judgment,
- The greater work experience has or does not have an impact on the employees' opinion of the project judgment.

For the effectiveness of the research, I primarily presented how the international literature defines the concept of project, project management, success factors and criteria. The literature is very rich in terms of both project definition and project management, as well as the definition of project success criteria and critical success factors.

The development of project interpretation

The interpretation of projects has undergone significant development in the last century. For a long time, the project was seen as a process (PMBOK, 2006), i.e., the project has a defined beginning and end, its budget and activities are well-defined, and it is aimed at achieving a given result. However, in the mid-1990s, this view was supplemented since the projects are implemented in a well-defined organization, so their management goes beyond the process-centric approach. (Lundin & Söderlund, 1995) At the same time - thanks to the importance of consistency with the strategy (Görög, 2003) - projects can also be considered as strategic building blocks, i.e., the delimitation of projects must be carried out in accordance with the corporate strategy. (Cleland, 1994) Based on these, projects can be defined as follows "...a project is a temporary organization whose activity is aimed at fulfilling a unique, complex task in order to create a specific result, also under specific time and cost constraints." (Görög, 2013, p. 9)

The development of project success interpretation

Similar to projects, today's definition of project success is also has a complex, compound nature. It can be approached from both the "input" side and the "output" side. Input-side approaches analyse the factors that led to the success or failure of the project. (Fortune & White, 2006) During the output-side approach, the evaluation of the projects comes into focus, i.e., it evaluates them in terms of success. (Cooke-Davis, 2002) Thus,

in order to properly analyse project success, it is necessary to analyse both the input and output sides.

The development of the interpretation of project success - in line with the development of the interpretation of the project - has undergone a major change in the recent period. (Judgev & Müller, 2005) Environmental changes have expanded the initial interpretation of the project triangle (time, cost, quality). (Antal-Mokos, et al., 2003), (Mészáros, 2010) The role of the stakeholders has become indisputably important, so approaches based solely on time, cost, and quality have become obsolete. In addition, from the 1990s it became clear that projects need to be "viewed" with a "strategic eye" as well, i.e., they need to be defined and managed in a manner which is integrated with the company's strategy. (Cleland, 1994) Another important factor is the system approach, i.e. the consideration of the interaction between the elements that make up project success (success criteria and success factors) is essential, they can no longer be considered as separate component. And this changed interpretation further strengthens the professional examination of project success, i.e. both the input (critical success factors) and the output side (success criteria) approach need to be considered when anyone would like to assess project, and this assessment needs to be done in a system, paying attention to the interactions between the success factors and success criteria. (Judgev & Müller, 2005)

Success criteria

The success criteria evaluate the project from the point of view of success (Görög, 2013) and their development - due to their nature - coincides with the development of the interpretation of project success, and nowadays it is no longer enough to simply apply an evaluation system based on the project triangle. (Atkinson, 1999), (Cooke-Davis, 2002), (Görög, 1999)

There are two types of approaches in the literature to define the project success criteria, hierarchical (Baccarini, 1999), (Görög, 2008) and non-hierarchical approaches. (Atkinson, 1999), (Wateridge, 1998) The first assigns equal weight to the evaluation criteria, i.e. they must all be met in order for a project to be considered successful, while the latter assumes that some criteria can compensate each other. Typically, the violation of an effectiveness criterion can be validated afterwards by effectiveness. For example, if the project achieved its goal, then a certain amount of cost overrun is acceptable. It is easy to see that the individual criteria can influence each other, and their independent examination can easily result in an incorrect assessment of the project. An example is the case of the Sydney Opera House, where the cost overrun more than thirteen times than the budget and the construction finished ten years behind schedule, but today, it is one of the 100 wonders of the world and a symbol of Australia and Sydney. If the project were to be evaluated based on the non-hierarchical approach, the Opera House did not meet the efficiency requirements, so it should be considered as a really unsuccessful project. However, the cost and time overruns were accepted after the fact by the outstanding nature of the project result (i.e. effectiveness). Consequently, hierarchical approaches meet the reality requirements. Based on these, it can be concluded that it is advisable to use a hierarchical approach when evaluating project success, which includes the three criteria mentioned earlier, such as (Görög, 2008)

- project triangle (time, cost, quality),
- satisfaction of the project owner and the organization,
- satisfaction of stakeholders.

Success factors

However, the success criteria represent only one side of the project success investigation, as they are examined from the output perspective, i.e. the project achieved what it was called for. In order for the analysis to be complete, it is necessary to consider the input-side approach as well, i.e., what factors contribute to the successful realization of the project. These are critical success factors.

Critical success factors can appear in project management and can be linked to corporate strategy also. (Earl, 1989) By critical success factor we mean the following, defined by Boynton and Zmud: "Critical success factors can be considered to be all factors that must go well in order for the manager or the organization to achieve success. They embody the corporate or management areas that require continuous and dedicated attention to achieve good performance." (Boynton & Zmud, 1984, p. 17)

Pinto and Slevin assumed that the process of project implementation presents a constant challenge to project managers, who are responsible for the project outcome, in many cases without having any influence on the budget or the management of the project participants. During their study, the authors attempt to identify 10 success factors of project implementation, as well as to compile a tool for measuring the 10 identified factors. (Pinto & Slevin, 1988)

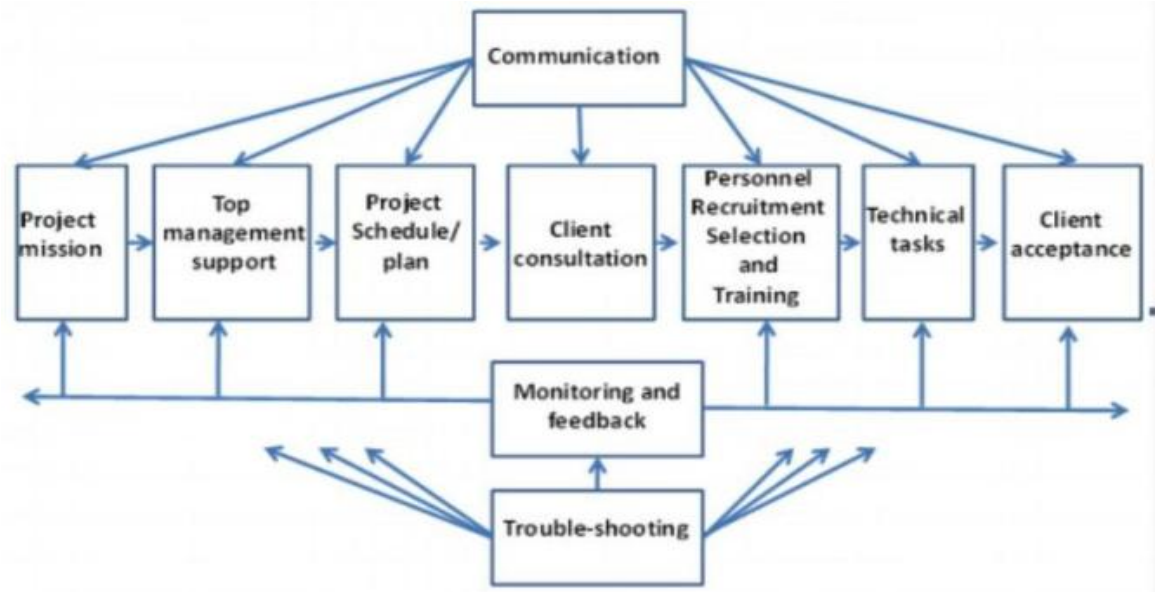

Figure 24: Top 10 Critical Success Factors
(Pinto & Slevin, 1988, p. 58)

The above diagram shows the ten success factors in a logical framework, where the arrows do not symbolize cause-and-effect relationships, but information channels and implications. Based on the logical connection, we move from the project assignment to the acceptance of the result during the execution of the project. In line with the different areas, communication, problem solving, monitoring and providing feedback are present throughout, as they provide ongoing support and assistance to other functions.

In his empirical research to explore the success factors of a "real" project, Cooke-Davies examined the factors determining success at three levels:

- Which factors lead to the success of project management,
- Which factors lead to the success of the project always and
- Which factors lead to project success from time to time. (Cooke-Davis, 2002)

In the first phase of the research, based on the analysis of the available studies, Cooke-Davies collected the most frequently occurring characteristics of each level of success. In the below table summarizing the results of the secondary research, the success criteria belonging to the three levels of success are presented. In order to perform the individual levels as efficiently as possible, the success factors identified in the studies can help the organization achieve better results, as well as the persons responsible for each level, who can be asked to perform the necessary tasks, are also displayed. (Cooke-Davis, 2002)

Project success level	**Typical success criteria**	**Possible success factors**	**Responsible at organizational level**
1st level: *Project management activity is a success*	*Time* *Cost* *Quality* *Technical Performance* *Scope* *Safety*	*1. clear and achievable project goals* *2. a well-selected, capable, efficient project team* *3. sufficient resources* *4. clear definition of technical performance requirements* *5. effective planning and control* *6. good risk management*	*Project Manager* *Project Team*
2nd level: *Project Success*	*Grants implemented* *Stakeholder satisfaction*	*1. clear and achievable project goals* *2. commitment and attitude of stakeholders* *3. effective supportive management and implementation* *4. suitable project strategy*	*Project sponsor* *Client or project owner*

3rd level: *Conscious project success*	*Comprehensive success for every project* *Comprehensive project management success* *Productivity of key corporate resources* *The effectiveness of the applied business strategy*	*1. continuous development of business, project and support processes* *2. effective and efficient portfolio, program and resource management* *3. a series of comprehensive and guided methods on all three levels*	*Shareholders* *Top management* *PMO managers* *Business managers* *Portfolio managers*

Table 46: Summary of the three levels of project success

(Cooke-Davis, 2004, p. 48)

In assessing the success of the project management activity, in addition to the triple requirement of time, cost and quality, the requirements of technical performance, competence and safety also appear and the fulfillment of these is primarily the responsibility of the project manager and the project team. A clear definition of project goals and expected technical outcome, an efficient project team, sufficient resources, as well as appropriate planning, control and risk management play an important role in fulfilling the conditions. The success of a given project can be evaluated on the basis of the support realized and the satisfaction of the stakeholders, in which, in addition to clear and achievable project goals, the appropriate project strategy, committed stakeholders, and effective management support are the determining factors. Achieving conscious, continuous, and comprehensive project success is possible through the development of processes, effective programs, portfolios, and resource management activities, as well as the application of comprehensive methods, in which, in addition to leaders and managers, shareholders also play a significant role.

As we can see, evaluating the success of a project is a complex issue, even with the help of different dimensions. The aspects of the evaluation can include quantitative, objectively measurable criteria, such as the cost and time frame; as well as qualitative criteria that can be evaluated only indirectly, subjectively, such as satisfaction or long-term effects. Based on the presented studies, the levels of success assessment and the range of success factors and criteria belonging to the levels are clearly visible, however, the authors do not give us any clues regarding the quantification of the assessment aspects and their measurement, even though in order to assess success as efficiently as possible, we need to strive to reduce subjectivity and make the criteria measurable. Similarly, we do not receive information about the areas, processes and methods that promote and support the expected performance, even though, the knowledge of these areas can help us to successfully implement the project and meet the success factors and criteria.

Success criteria	***Success factors***
To meet the deadlines	*Communication of project members*
To meet the scope	*Management support*
To meet the budget	*Compliance with project schedule*
Satisfaction of the members of the project	*Communication with end-users*
Support of organization / another department	*Project members' personality*
Flexibility	*Technical achievement / performance*
Seamless handover	*Adoption of the results*
Technical performance	*Control*
Speed of the information flow	*Feedback*
Quality of the information	*Finding a solution*
	External circumstances

Table 47: Success criteria and Success Factors

(own compilation)

The management style of the project manager

One of the elements of the success factors is the management style of the project manager. However, due to its nature, it requires special attention, since the project manager affects all stages of the project process (Görög, 2003), so the project manager importance is highlighted throughout the entire life cycle of the project. (Fortune & White, 2006) Several approaches have been created (Cleland, 1994), (PMBOK, 2006), (Turner, 2009), but one of the first can be attributed to Fiedler in 1964. (Bakacsi, 1989) It distinguishes between two types of behaviours: task-driven and stakeholder-driven. The former emphasizes the correct definition of tasks and their realization. The main elements of this are delimitation, planning, control, optimization, and related communication. The other approach is stakeholder-centric, in which the stakeholders' experiences, knowledge, and insights can be of similar importance in some phases of the project as those of the project manager. Among its main elements, the previously mentioned task-driven behaviour also appears in the stakeholder-driven behaviour (i.e., delimitation, planning, control, optimization), but this is complemented by the use of very strong project marketing, communication, and the motivation system. This view is complemented by the categorization of different leadership styles. The leadership style includes project team management and project management. Several management style categories can be distinguished. (Görög, 2013), (Müller & Turner, 2010), (Goleman, 2000)

- leadership style based on personal traits: the essence of this approach is that the project managers need to have basic values that are essential for the success of the project (such as self-confidence or being born with natural talent to lead), and if they have these, they will manage the projects successfully,

- behaviourally based approach: different projects require different management styles, therefore, the project managers need to use their (developed or inherent) attributes to the extent that the project requires, for example, flexibility or " empowerment" of project team members,
- contingency-based management approach: according to the trend, it is necessary to identify the characteristics of the project, and the manager with the most suitable attributes needs to be delegated to successfully carry out the project and the focus is on completing the task and reacting to any deviations from the plan,
- the emotional intelligence trend: the trend is basically based on the assumption that the emotional intelligence of the project manager contributes to project management (and the project success) to a greater extent than the management style, therefore, during project delivery the project manager emphasizes the four components of emotional intelligence: self-awareness, self-management, social awareness, and relationship management,
- competence-based approach: according to the approach, the project manager needs to possess certain competencies (e.g., those related to emotional intelligence) in order to achieve success.

Leadership style	***Main characteristic***	***The Style in phrase***	***Underlying EQ competencies***
Commanding	*Demands immediate compliance*	*"Do what I tell you"*	*Drive to achieve, initiative, self-control*
Visionary	*Mobilizes toward a vision*	*"Come with me"*	*Self-confidence, empathy, change catalyst*
Affiliative	*Creates harmony and builds bonds*	*"People comes first"*	*Empathy, building relationship, communication*
Democratic	*Forges Consensus through participation*	*"What do you think?"*	*Collaboration, Team leadership, communication*
Pacesetting	*Sets high standards for performance*	*"Do as I do, now"*	*Conscientiousness, drive to achieve*
Coaching	*Develops People for the*	*"Try this"*	*Developing others,*

	future		*empathy, self-awareness*

Table 48: Goleman's six-leadership style

(own compilation)

(Based on Goleman, 2000.)

Each leadership style includes both task-oriented and stakeholder-centric approaches. The key difference in each project is how much the project manager needs to adapt to the project team and the project, versus how much the permanent characteristics of the project manager dominates in their style of managing the project. (Görög, 2013)

Research and research methodology

The aim of my doctorate research was to discover what success factors and success criteria determine the success of a project. The research was exploratory in nature with an anonymous questionnaire. Based on the research goal, I formulated two questions:

- Whether the different positions held by the project members have or do not have an impact on the employees' opinion of the project judgment,
- Whether the greater work experience has or does not have an impact on the employees' opinion of the project judgment.

In order to answer the research questions of my doctorate research and dissertation, as well as considering the theories related to my research and my workplace experiences, I formulated the following assumptions:

1. <u>Assumption</u>

In the examined Australian company, a difference can be shown in the judgment of the elements describing the success criteria of the project members based on their role in the project.

2. Assumption

In the examined Australian company, a difference can be shown in the judgment of the elements describing the success factors of the project members based on their role in the project.

3. Assumption

In the examined Australian company, there is a difference in the assessment of success criteria regarding work experience.

4. Assumption

In the examined Australian company, there is a difference in the assessment of success factors regarding work experience.

The research model was developed to visually display the literature review and to set research goals, research questions, and assumptions.

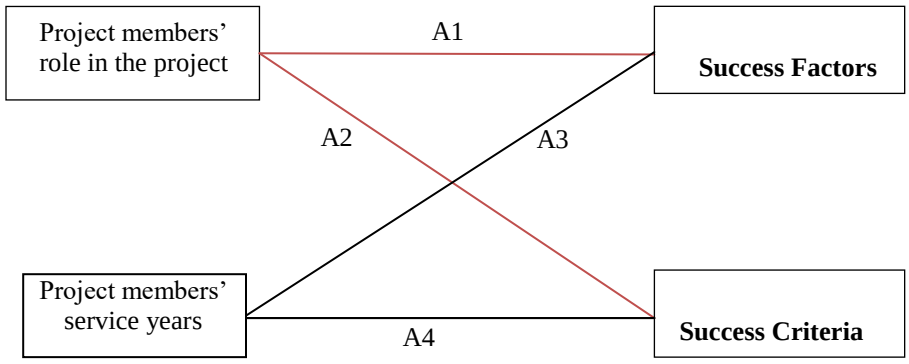

Figure 25: Research Model

(own compilation)

The relevance of the research was given by the challenges of determining the success of a project. Therefore, examining which success factors and success criteria have significant impact to say a project is failed or delivered successfully, based on the opinion of the project participants, can help answer the research questions.

In order to confirm or reject the assumptions and answer the research questions, I divided the research into two parts: the literature review and the empirical investigation.

During the literature review, the definition of project and project management was presented, the different project organizations (i.e.: coordination-, project- or structure oriented, matrix, etc.), and the manager or leadership styles that can be applied during the implementation of the projects were described. The project success factors and success criteria defined in the literature were also presented and identified.

The research sample was made up of several companies and different sizes, mainly banking and other financial service provider companies, as well as large international consulting companies. The application of innovative technology solutions is very characteristic of the field, thanks to the permanent cost-cutting aspiration, various product development and its technology requirements, as well as the endless technological evolution. Considering the nature of the sector, it is an extremely knowledge- and technology-intensive sector, and the individual technological life cycles are very short. As a result, internal or external customer needs can change during a project. Different companies place great emphasis on employee satisfaction and the development of their knowledge. This can be attributed to the fact that the field is very

knowledge-intensive, and the knowledge is distributed among the employees, so their retention and the usefulness of their previous experiences and knowledge in the various projects are extremely important.

The research population was the employees of the areas typically included in a project. These areas are Project Management, IT Department, Business Analyst, and the Business, End Users. The number of responses to the research questionnaire is 318 out of 380 (83,68%), of which 96 responses (96,00%) refer to the Project Management, 100 responses (83,33%) refer to the Business, End Users, 38 responses (63,33%) refer to the IT Department and 84 responses (84,00%) refer to the Business Analyst. The participants have taken part in projects of all types and complexity several times, so they were able to give a comprehensive picture of the projects implemented in their company, i.e., they have homogeneous knowledge.

The nature of the research is characterized by both qualitative and quantitative research methods. (Creswell, 1994) (Babbie, 1996) Quantitative research tools strive for measurement, quantities, and the quantification of the investigated meanings. At the same time, qualitative research methods focus on quality and try to answer research questions by examining the quality of individual things and phenomena under investigation. (Héra & Ligeti, 2005)

For the research of my Doctorate thesis, according to which I want to identify the variables that impact project success in Australian companies, I used questionnaire data collection. When composing the questionnaire, I considered the formulated assumptions and the created research model. To process the collected data, I first summarized the answers to the questionnaire, then conceptualization and operationalization of the

variables followed. I used Microsoft Excel as part of the Microsoft 365 office and IBM SPSS v22 statistical programs to process the analysis.

Result of the research

By evaluating the results, I identified the success criteria and success factors for the 3 main groups (End User, IT+BA, Project Management) formed based on the key areas involved in the research. After examining the results obtained, in the case of the success criteria, three common variables (Flexibility, Project members' satisfaction, Project organizational support), while in the case of the success factors, two variables (Control, Finding a solution) can be found among the main components of all three groups. Regarding the obtained results, the assumptions formulated for both the success criteria and the success factors were refuted.

I also examined the effect of greater work experience on the assessment of the success of a project. To this end, I conducted main component analysis of the success criteria and success factors for all respondents. Regarding the main components identified, I used the One-way method to examine the impact of the responses of project members employed before or after 2021 on the main components. The study resulted in a high level of significance for both success criteria and success factors. As a result, the assumption regarding success criteria and success factors was refuted.

During the research, I prepared the tests that could be carried out regarding the small number of elements. Knowing the results, I make a proposal for further research directions for the future. Comprehensive research with a larger number of elements could

adequately prove that the assumptions formulated during the research are correct, the results obtained during the research are adequate, or they would be rejected or refuted. In addition, I also defined the research directions and the implementation of them can make the evaluation of a project more successful.

Limitation of the Research

Due to the nature of the research, it cannot be generalized, even more companies provided the sample, but within a company, not all projects involved employees answering. The results of the research may only be true for a company with similar characteristics. Therefore, the relevance of the research could definitely be increased if we examined several companies with different characteristics from the given Banking, Financial Services, Insurance (BFSI) sector or analyzed companies from another industry (construction, pharmacy) as well.

6.2 Implications

The selection of my research area and topic was primarily influenced by my professional background. So far, during my career, I have always taken part in projects - sometimes as a project manager, sometimes as a project member, sometimes on the client side, sometimes on the vendor side. Since I have always worked with international or worldwide companies and everywhere the success of the project was mostly defined differently through the project closing discussion and due to these differences, I decided to deal with the examination of the success criteria and success factors of the projects within Australian organizations in my Dissertation.

My doctoral research is motivated by the idea that by determining the success factors and success criteria of projects in Australian companies, the drive of the projects

and the competitive advantage of the organizations in the fight for a better market position can be more effective.

The completed survey provides a comprehensive picture of the examined companies' "practice", how they define the project success and what project factors and criteria have an impact on forming the opinion of the project members about the project success.

The questionnaire of my Dissertation can be a suitable tool for mapping further practice (more in the next chapter: Recommendations for Future Research), on the basis of which it is possible to determine, with the help of the success factors and success criteria, the characteristics of the practice that are necessary for the success of the project, as well as the areas to be developed or require more focus in the future. The success factors and success criteria elements can also concretely display the development areas and the activities to be developed. In the growing competition observed on the market of the examined Australian companies, increasingly large and complex projects are being launched within the organizations. Therefore, to have better coordination and smooth execution, the use of different organizational methods and management tools is essential and they also need to focus on the elements that have an impact on the project success.

In order to implement and execute successful projects, the organizations need to know the different project success criteria, success factors and all aspects that play a role in assessing success, on the basis of which the project they have created is evaluated. In addition to the technical solutions and management methods, an efficient and effective senior and project management must also pay attention to the human domain, communication, and cooperation.

In my research, I found there are no statistically significant differences between project team members and stakeholders on success criteria and success factors. Similarly, based on years of service at the organization. But what may my findings mean for the practical world of business and project management? Are there any actionable steps that project professionals can take based on these insights? For example:

- Can project managers conduct more discussions including *all* stakeholders in the confidence they all share the same view of what the success factors and success criteria are?
- Perhaps all participants - including end-users, IT, and the project team - can review the project schedule and test plans because they all have a similar understanding of what project success means?

Based on my research, I can tell that Flexibility and Finding a solution are the most important project success criteria and success factor for all project participants. Therefore, focusing on communication, the information flow, and the quality of the information are critical. There should be an agreement between the project team, the internal or external customer, and the management regarding the project goals - Satisfaction of the members of the project. During the project, progress needs to be measured with a plan that shows the entire path, clearly identifies the responsible parties, and can be clearly communicated – Deadlines, Control.

Also, project management should look “outside the box”, be aware of the project environment, including those interested in the project – External circumstances. Should stop to let the any idea go to nothing because of helplessness. Creative thoughts and creative thinking should be inspired, encouraged and heard, investigated properly - Communication with end-users and project members. This can improve the project

members engagement and motivation. Not the political interests and preferences should dictate important decisions about the project.

6.3 Recommendations for Future Research

The research carried out in connection with the writing of my Dissertation thesis suggests several further research directions.

The definition of success factors and success criteria for larger respondents can be continued by increasing the sample size and expanding the different financial institutions included in the study. In my research, mainly bank and financial service provider employees participated. Therefore, collecting answers from insurance companies can give us a picture of how the whole Banking, Financial Services, Insurance (BFSI) sector defines the project success.

Furthermore, the research could be expanded with questions about the education, project related certifications, countries and nationalities of the respondents, and with the answers received, research about cultural differences could also be conducted. In other words, to examine whether, regarding employees of different nationalities, differences can be discovered in terms of success factors, success criteria, and the assessment of the success of the project.

At the same time, the completed project success factor and success criteria research can be further developed to map projects conducted in other areas. For example, Information and Communication Technology (ICT), construction, infrastructure development, research and development, pharmacy, etc. could bring significant results in

the discovery of project success factors and success criteria, both in Australia and internationally.

6.4 Conclusion

The success of projects is extremely important for all organizations, and achieving project success is particularly important for organizations, regardless of whether it is a profit-oriented or non-profit company, because organizations allocate a significant number of resources, investing amounts to their projects every year. Because this is the meaning of achieving the strategy, and this is one of the keys to ensuring dynamism. (Görög, 2001) Without dynamism, adaptability and development, any organization can be threatened with extinction. Thus, starting projects is extremely important for every organization, and accordingly, the number of started projects has increased recently, often to implement capabilities enabled by new technologies.

Fortunately, there is a rich literature on project definition and project management, and regarding the definition of project success criteria and success factors. This doctoral research can provide a basis for project managers and project participants of similar companies by taking into account the appropriate success factors and success criteria. It can also serve as a lesson for other project managers and project members to guide their project planning and execution.

Also, in today's fast changing world we cannot leave out some cutting-edge project domains. Such as to implement AI in financial services organizations; the wave of ESG environment, social, governance projects in financial services organizations; the

push by organizations to simplify their systems and operations, i.e. reduce unnecessary complexity; and potential new domains such as other new technologies, implementing or adopting capabilities made possible by quantum computing. To evaluate, to measure these projects' success my Dissertation also can be a foundation to identify and use the different project success factors and success criteria accordingly.

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APPENDIX A

THE SURVEY

IDENTIFICATION OF VARIABLES THAT IMPACT PROJECT SUCCESS IN AUSTRALIAN COMPANIES

This Survey is related to a Doctor of Business Administration research – Swiss School of Business and Management, Switzerland

Dear Respondent!

Thank you for your cooperation to complete this survey to my Doctor of Business Administration dissertation. The focus of this survey is to map the circumstances of your participation in a successful or failed projects. The survey tries to uncover the affecting circumstances, success factors and success criteria of the projects. I would like to ask you, please, to help my work with your real and honest answers. The survey is anonymous, your answers will be confidential, and I will use your answers only for my dissertation, will not share with third parties. To fill in the survey is about 10-15 minutes.

Question types:

- In 1 to 6 scales, please, put your X to the right place!
- In case of more answers, please, put your X to the right places!

1. General information

What was your position during the project?	
Have you ever taken part in similar projects? (yes/no)	
When did you join to the organization? (yyyy.mm)	
How long have you been in your current position? (yyyy.mm)	

2. Scopes

During the projects, how important were the following scopes to you?								
	Not at all	1	2	3	4	5	6	Totally
To meet deadlines								
To meet project budget								
To achieve financial profit								
To increase efficiency								
To rationalize workflows								
To automate workflows								
To increase speed of information flowing								
To improve quality of information								

3. Resources

What is your opinion? How much were the following factors appropriate?								
	Not at all	1	2	3	4	5	6	Totally
Experiences of project members								
Time spent on projects by project members								
Responsibility of project members								
Cooperation of project members								
IT resources								
Third party/ outside suppliers								

4. Project management style

What is your opinion? How much do the following leadership styles influence to the success of the project?								
	Not at all	1	2	3	4	5	6	Totally
Visionary – "Come with me" (Motivates people towards a vision)								
Coaching – "Try this" (Developing people for the future)								
Affiliative – "People come first" (Creates harmony and builds emotional bonds)								
Democratic– "What do you think?" (Forges consensus through participation)								
Pacesetting – "Do as I do now!" (Sets high standards for performance.)								
Commanding – "Do what I tell you" (Demands immediate compliance)								

5. The Project Manager's tasks

What is your opinion? How much did the project manager succeed in fulfilling the following tasks of the project?								
	Not at all	1	2	3	4	5	6	Totally
Real project planning								
Provision – assigning tasks								
Coordination between participants								
Information flow within the project								
Information flow outside the project								
Control and monitoring								
Communication within the project								
Communication outside of the project								
Considering all the risk factors								
Conflict management								
Problem solving								
Managing unexpected events								

6. Project organization

What is your opinion? How much did the following aspects influence the success of the project?								
	Not at all	1	2	3	4	5	6	Totally
Open and direct communication								
Teamwork								
Free brainstorming								
Sharing previous experience								
Fair, and accurate feedback								
Willingness to compromise								

7. Success criteria

What is your opinion? How much did the following success criteria influence the success of the project?								
	Not at all	1	2	3	4	5	6	Totally
To meet deadlines								
To meet scope								
To meet budget								
Satisfaction of the members of the project								
Support of organization / another department								
Flexibility								

Seamless handover								
Technical performance								
Speed of information flow								
Quality of information flow								

8. Success factors

What is your opinion? How much did the following success factors influence the success of the project?								
	Not at all	1	2	3	4	5	6	Totally
Communication of project members								
Management support								
Compliance with project schedule								
Communication with end-users								
Project members' personality								
Technical achievement / performance								
Adoption of the results								
Control								
Feedback								
Finding a solution								
External circumstances								

9. Follow up of the project

What is your opinion? How much did the scopes of the project meet the followings after the completion of the project?								
	Not at all	1	2	3	4	5	6	Totally
Increased efficiency								
Increased information flow								
Increased use of information								
Reliable operation								
Satisfied end-users								
Impact on the environment								
Profit growth								

Thank you for your cooperation to complete this survey.

If you have questions, please, do not hesitate to contact me.

Best Regards,

Csaba Harcz

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