



DEPARTMENT OF MECHANICAL AND INDUSTRIAL  
ENGINEERING

TPK5100 - APPLIED PROJECT MANAGEMENT

---

## Reflection Report - Literature Review

---

*Submitted by Group 21:*

Fredrik Gusfre, Mads Dørum, Thomas Lothe Dahl, Torbjørn Gjersøe

October, 2022

---

## Table of Contents

<b>List of Tables</b>	<b>i</b>
<b>1 Introduction</b>	<b>1</b>
<b>2 Evaluation of Project Management</b>	<b>2</b>
2.1 Organization, tasks, roles and responsibilities . . . . .	2
2.2 Risk management . . . . .	2
2.3 Communication plan . . . . .	3
2.4 Success or failure of the project . . . . .	4
<b>3 Evaluation of the Impact</b>	<b>6</b>
3.1 Target audience of the results . . . . .	6
3.2 The quality of the results . . . . .	6
<b>4 Success Factors and Failure Factors</b>	<b>7</b>
<b>5 Important Lessons Learned</b>	<b>8</b>
<b>6 Reflection on Learning and Unlearning</b>	<b>9</b>
<b>7 Acknowledgements</b>	<b>10</b>
<b>Bibliography</b>	<b>11</b>
<b>Appendix</b>	<b>12</b>
A Pre Report . . . . .	12
B Literature Review . . . . .	22
C Video Link . . . . .	35

## List of Tables

1 Roles and responsibilities. . . . .	2
2 Risk register. . . . .	3
3 Stakeholder mapping. . . . .	4
4 Success criteria for project management, project success and process success. . . .	4
5 Success criteria used for evaluation of the project. . . . .	4
6 We evaluate our project management effort as successful. . . . .	5
7 We evaluate the quality of our final results as outstanding. . . . .	6

---

# 1 Introduction

This reflection report is based on the literature review submitted as our project assignment in the course TPK-5100. The focus of the review was to find relevant literature and research on how project practitioners and organizations can prepare for the challenges of digital transformation, and what kind of competencies that are needed. Based on the literature gathered and analyzed, a literature review was written on the topic. The review also highlighted the main findings on what kind of success factors are relevant for both organizations and project practitioners in order to tackle the challenges of digital transformation.

The literature review was a qualitative review, with high quality literature and research. The literature used was obtained from trustworthy databases, and most of the research and literature selected was peer reviewed. The literature was chosen and analyzed in a structured way, in order to secure good quality information for the review.

The main purpose of the review was to research and develop a common understanding on how project practitioners and organizations can tackle the challenges of digital transformation. There was also a focus on what kinds of skills project practitioners need to develop in order to prepare for digital transformation. There are a lot of literature describing challenges of digital transformation and skills needed related to this, but there are not many articles providing a common understanding and summary on the important skills and success factors needed in order to prepare project practitioners and organizations for digital transformation. This literature review was developed in order to support the existing literature with a common understanding on the most prevalent challenges and skills needed across all industries and projects related to digital transformation.

This report is a reflection of the project management and planning of the main assignment (the literature review). The success factors, success criteria, risk management and project management will be evaluated and reflected upon in this report. In addition to this, a reflection on communication and collaboration between the group members will be included. There will also be a reflection on the difficulties and problems that occurred during the project phase, and some plausible reasons for this. This will further be used for learning, in order to secure that this does not happen again in future projects.

---

## 2 Evaluation of Project Management

### 2.1 Organization, tasks, roles and responsibilities

The project team was organized and structured before the writing of the literature review. This is important in order to secure good collaboration, organization and structure in the project team. An organized team will communicate better, and everyone in the team will know their responsibilities and who to contact in different scenarios. Important success factors for a project is a good organized project team, clear roles and responsibilities, and distribution of the tasks related to the project. The establishment of the different roles, responsibilities and tasks were done in the first meetings during the initiation phase of the project. There was appointed a project manager, and the other members were given certain roles and responsibilities. There was not a very strict hierarchy in the project team, but in order to secure an organized and structured team, different roles were given to the members. Each member had different responsibilities, and every individual was responsible for the completion of the deliverables and the final product (the literature review). The table below illustrates the main tasks and responsibilities for each individual role:

Role	Main Responsibilities
Project Manager	Planning, distribution of tasks, final deliverable, organization of the team
Project Member A	Communication channels, meeting reports, planning of meetings, information flow
Project Member B	Solving conflicts, motivation, supporting the team, collaboration
Project Member C	Finding databases, organization of literature, references, collaboration

Table 1: Roles and responsibilities.

Even though each member was assigned a certain role with its own responsibilities, everyone in the team was expected to contribute and collaborate on every part of the project. This means that every individual had a responsibility for both the sub-deliverables and the final deliverables. The roles and responsibilities was an overview of the main responsibilities each member had, but collaboration between the roles and responsibilities was expected and encouraged from the start of the project.

The literature review was divided into multiple sub-deliverables and work packages, which was then appointed to each member in the team. Every member had therefore a responsibility to complete his/her part of the review. One person was responsible for the abstract, introduction and the conclusion. Another one was responsible for the methods, and so on. This started out working well, but after some time some of the members did not complete their work and responsibilities given. This could have had an impact on the quality of the review, since the workload on the other members of the team was increased because of this.

Initially, the given roles and responsibilities went very well, and the collaboration and the communication worked fine in the initial phase of the project. During the execution phase, some members did not complete their responsibilities, and others had to do more work and take on more responsibilities than expected from the start. The reason for this could have been poor motivation on some of the members, but could also come from lack of knowledge or prioritization of the project assignment.

The planning, organization and delegation of the roles and responsibilities went well and everyone in the team accepted their part in the beginning. The thing that did not go so well was that the workload on some members became increasingly heavier, due to other members not doing their work as expected. One can say that the initiation and planning went well, but the execution did not go as planned.

### 2.2 Risk management

In the planning phase of the project, a risk management plan was made. This was done in order to establish a register over the most plausible risk factors related to the project. In addition to

---

a mapping of the risks, a plan on how to address them was made. The risk management plan was done in four stages based on the risk management process described by Hussein (2018, pp. 152-155). First the risks that could occur were identified during one of the meetings in the team, then the assessment of each risk was evaluated, and lastly the response planning, risk monitoring and control process was established. This was done together in the project team during a meeting. Below is the established risk register used during the project. The status updates is not included here. The register is based on the example provided by Hussein (2018, p. 155).

Description of Risk	Risk Severity	Measures	Responsible Person	Status Update
Poor communication	Significant	Additional meetings	Person A	
Not completing the work	Critical	Redistribution of tasks, contact supervisor	Person B	
Untrustworthy literature	Critical	Removal of literature	Person C	
Conflicts within the group	Significant	Additional meetings, contact supervisor	Person D	
Misunderstanding of the assignment	Critical	Brainstorming, contact supervisor	Person A	
Failure to comply with deadlines	Critical	Contact supervisor	Person B	

Table 2: Risk register.

The risk management plan consisted of many different risks related to the project and its execution. Some risks did occur during the execution of the project. An example of a risk that occurred was that some members did not complete their work, and the workload was heavier on the other members. Another risk was poor motivation and communication, and this was also addressed during the project with additional meetings and better communication. The risk identification and the risk management plan worked very well, and was tested since some of the risks actually occurred. The planning of the risks was done in an organized and thoughtful way, and the most relevant and plausible risks were identified and handled accordingly.

## 2.3 Communication plan

In the planning phase of the project, the project manager and the project team established a communication plan. This was done to secure a common understanding on how the communication within the team was supposed to be done. Further, this enabled the team to communicate in an effective and structured way and to avoid misunderstandings on how to communicate during the project. The communication plan consisted of information regarding on where the communication should be done, who to contact in different scenarios, and when and how to establish and create a communication report.

The project team had at least two weekly meetings during the project life cycle, and additional meetings if necessary. The meetings were physical meetings at suitable locations to ensure good meeting quality and information flow. Following every meeting, a meeting report was made and published in the common communication platform. This was done in a structured way to ensure that every member of the team had access to the meeting reports and was kept up to date on the project. A stakeholder mapping was also done in order to map out the most important stakeholders in the project, and the significance of the impact of each stakeholder. In this project there are few stakeholders, and the most important and critical stakeholder is the team itself and the members within. An explanation on the different stakeholder groups, and how to handle them, are explained by Hussein (2018, pp. 53-54).

---

Stakeholders	Interest	Influence	Group
Project group	Large	Critical	G1
End users	Large	Marginal	G3
Lecturer	Small	Critical	G2
Teaching assistants	Small	Marginal	G4

Table 3: Stakeholder mapping.

Initially the communication worked well within the project team, and every member attended the planned meetings. In every meeting there was a person responsible for taking notes and uploading them to a common communication platform. This worked well in the beginning, but after a while some members did not meet at planned meetings. Again, the planning went well, but the execution did not go accordingly because of some members failure to meet and communicate. This was addressed by talking with the individuals, and an establishment of rules and regulations if it was to happen again. This could have been established in the initiation phase of the project, and should have been included in the communication plan from the start. This way, each member would know who to contact if they did not manage to attend the meeting. The reason why this was not emphasized was because the team initially thought this was understood by everyone involved.

## 2.4 Success or failure of the project

In the initial phase of the project, an overview of the success criteria for the project was established. This was done in one of the meetings with discussions and brainstorming on how we would evaluate the outcome of the project when, and after, it was delivered. Below is the original overview of the established success criteria. Table 4 includes the three most important success criteria for each individual clusters as agreed upon within the project team. Table 5 includes the criteria used for the final evaluation of the project.

Success Criteria		
Project Management	Project Success	Process Success
Achieving deadlines	Higher competence	Good communication and collaboration
Delivery of the product	Learning outcome	Involvement of stakeholders
Clear roles and responsibilities	Contributing to the literature	Overall satisfaction of the project team

Table 4: Success criteria for project management, project success and process success.

After the completion of the project, the evaluation of the success or failure of the different clusters was done. The project management and project is considered a success, since all of the success criteria identified in the beginning was achieved despite challenges underway. The process is not considered a success in this project because of the challenges underway. The communication and collaboration between some members was not optimal, and the motivation and determination of these was not sufficient.

Success criteria	How to measure	Methods of measurement
Good grade	Grading of the assignment	Objective
Achieving deadlines	—	Objective
Good collaboration	Reflection and discussion after the project completion	Subjective
Good learning outcome	Grading of the assignment and the exam and reflection	Objective and Subjective
Completion of the assignments	—	Objective
Accepted peer-review	Result of the peer-review	Objective

Table 5: Success criteria used for evaluation of the project.

---

The criteria with objective measurement methods are easy to evaluate because of the objectiveness of the results. We can not evaluate these before the final grading and results of the project assignment and the exam is received. On the other hand, the criteria with subjective measurement methods are not so easy to evaluate, but they are very important when evaluating if the project was a success or a failure. The evaluation of the subjective criteria was done together with the team in a meeting after the completion of the literature review.

Initially, the team agreed that good collaboration and communication was a success criteria for this project. This worked well in the beginning, but slowly but surely developed into a failure. Some members did not contribute as much as expected, and the communication between some of the members was not as agreed upon. This developed into poor communication and collaboration due to some members not communicating as expected and not completing their work. This further made some members workload increasingly heavier, and therefore the learning outcome on this project might also have impacted the members differently. This problem was addressed multiple times, but did not work as intended. Despite these problems, all the deadlines were achieved and the assignments were completed and delivered.

The management of the project is considered a success, because of the detailed planning and organization of the project. The problems that occurred was outside the control of the management of the project, but was caused by members of the project team. The problems was addressed multiple times, but did not improve as expected. There was no other solution than to increase the workload on some members when others did not do their part. The reason why we consider the management of the project a success, is because the final deliverable was delivered as planned despite all the challenges underway. This shows that the project management was able to tackle unforeseen challenges, and reorganize and restructure the initial plan.

<b>Scale</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neither Agree nor Disagree</b>	<b>Agree</b>	<b>Strongly Agree</b>
<b>Our Response</b>				X	

Table 6: We evaluate our project management effort as successful.

---

## 3 Evaluation of the Impact

### 3.1 Target audience of the results

The main target audience of the results of the literature review are the readers of the review. In addition to that, the lecturer, teaching assistants and students are also a part of the target audience. If the literature review is accessible to others, every reader of the review will be a target of the results. The intended target audience was project managers, project practitioners, organizations and businesses going through digital transformation. The focus of the review was to establish a common ground on the most important elements related to project management and digital transformation. This means that every person that reads the review, and decide to use the information provided will be a target audience of the results provided from the review.

The impact of the review will depend on how many readers this literature review will have, and if the results provided will be used by others. There is no doubt that this review will contribute to the literature, if published, with a common understanding of the most important elements and skills needed in order to tackle the challenges of digital transformation. The review could provide project practitioners, project managers, and students with information on the topic in a precise and structured way.

After completing our paper on digital transformation, the feeling is certainly that someone would find the review helpful. Of course, organizations and project managers are the main part of our target audience. They would hopefully find useful information and help create an understanding of the different aspects that needs to be taken into account in order to succeed through a digital transformation. Other students, like ourselves, could also benefit from the results in our review.

### 3.2 The quality of the results

The quality of the final results is dependant on what kind of literature was used, and how the composition and writing of the review was done. All the literature used was obtained from trustworthy sources, and a lot of the articles and research used is peer-reviewed. In addition to this, there were multiple readings of the literature selected, and every article had to pass our quality check. Every member of the team read through each article selected in order to secure high quality literature. Selected literature was analysed and compared with each other, and the authority of the authors were examined. In addition to this, the final review was considered complete only after many drafts and discussions. This was done to secure the quality of the final deliverable (the literature review).

To verify and prove the quality of our final results, we have to consider the peer-review and the final grading. In addition to this, there is possible to hand out our literature review to independent researchers, project practitioners and organizations in order to establish a measure of the quality of the review. Every team member involved in the project agreed that the quality of our results was good, but the team itself cannot be the judge of that due to conflict of interest. Our main evidence to support our evaluation will in this case be the grading of the project assignment and the peer-review.

Scale	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Our Response				X	

Table 7: We evaluate the quality of our final results as outstanding.



---

## 4 Success Factors and Failure Factors

In the initiation phase of the project, the team had a meeting where different success factors relevant for this project was discussed. This was done in order to plan and execute the project with a common understanding within the team on what the most important success factors were. If everyone in the team has a common understanding of the factors of success, it is easier to communicate and collaborate to establish these factors during the planning and execution of the project. The team agreed upon the 5 most critical factors for success relevant for this project, and was determined to try to implement them during the project. The success factors agreed upon were good communication and collaboration, clear roles and responsibilities, good risk management, clear goals and good preparation.

After the final deliverable of the project was delivered, the success or failure of the project was discussed and reflected upon in a project team meeting. The reason why this project could have been considered a failure is the lack of communication and collaboration from some project members. In addition to this, a failure factor would have been poor motivation and lack of initiative within the project team. Because of this, other members had to take on more responsibility and workload than initially planned. The problems was addressed multiple times throughout the project, but it did not better the initiative and motivation of some of the members significantly.

Even though poor communication and poor motivation was prevalent in some team members, the project was delivered on time with good quality. This was made possible because of good risk management, good project management, and the ability to change the initial plan and execution of the project when problems occurred. The ability to adapt and reorganize the project team is seen as a crucial success factor in this project. In addition to this, another success factor for this project was the ability of some members to take responsibility for their tasks and complete more than the agreed upon work. The project is considered successful because of the ability to adapt, manage risks, the final deliverables, and the learning outcome of the responsible team members. The most important success factors for this project are therefore considered to be:

- Good project management
- The ability to adapt and reorganize
- Clear roles and responsibilities
- Clear goals and deliverables
- Organized and good WBS schedule
- Good time planning
- Good risk management

---

## 5 Important Lessons Learned

The project assignment provided the team members with a lot of valuable knowledge. The most important lessons learned is that good communication and collaboration within the project team is crucial in order to successfully complete the deliverables according to the plan. In order to secure good collaboration and communication within the project team, a common understanding of the importance of the project is essential. This was emphasised at the start of the project, in order to boost the motivation of the team members. This worked for some members of the team, but not everyone. Therefore, another lesson learned is that during the establishment of a project team, it is important to include motivated members with a desire to complete and deliver the project as planned. Another lesson learned is that members of the project team should be responsible and have the necessary knowledge about the topic of the project. If only a few of the members of the project team is motivated and takes initiative, the workload on these will increase, and the poor motivation will contaminate the rest of the team. This is a huge failure factor, and has to be addressed if it occurs during a project.

The team also learned the importance of the establishment of project planning and work breakdown structure. The work breakdown structure made it easier to divide the different sub-deliverables and work packages between the members, and made the time scheduling of the project easier. In addition to this, the work breakdown structure was used as an overview of the tasks needed to be done during the project. The importance of a risk management plan was also a valuable lesson learned, especially since some of the risks occurred during the project. We also learned the importance of establishing success criteria, in order to evaluate if the project was a success or not.

As a summary, if we were to advice other students or project teams initiating similar projects is that they should first identify the motivation and dedication of the project team. It is important to emphasize the end goal of the project to help increase the motivation of the team and also ensure that the team members are working towards the same goal. Good communication and collaboration is also crucial for the team to succeed. A communication plan can be a helpful tool to ensure good communication between the team members.

In addition, the openness between the team members are of vital importance. If the environment feels friendly and trustworthy, each member lower their guards and it feels easier for each person to openly say how they are doing and how their progress is developing. By being as open and honest as possible during the duration of the project about each members progress and struggles, are only going to improve the project as the other members become aware of the struggles or lack of progress. With this honesty the higher overview of the project becomes clear of where parts are missing and makes it easier to reach the different milestones and goals during the project. The earlier each member feels safe enough to express this, the better for the total project and the working environment overall.

---

## 6 Reflection on Learning and Unlearning

In this project we learned a lot of important lessons related to project management. A practical and "real-life" project made the learning experience both challenging and rewarding. During the project we have gained an insight in how to do a literature review and thoroughly going through articles and books with a scientific view. Not only picking the first and best, but reading and finding the ones with credible sources and authors and then being able to discuss the topic with the other members. This also gave the discussion much more depth as we all became very competent on the areas we were writing about.

The fact that we were from different study areas and cultures led to a wider view on how to solve the different tasks, and we learned to be open to other ways of interpreting parts of the project rather than only doing it in the way that each separately have been doing projects in the past. As we were a group of students who are usually working alone on assignments, there was a learning outcome of having to adapt to working with people on different time schedules who uses dissimilar work approaches. This was a part that had to be unlearned and the group had to compromise and find the best possible way of working that made every member satisfied.

Because of the challenges that occurred during the project, the team learned the importance of having an agile approach when problems did occur. By having an agile mindset and a good risk management plan, it is easier to adapt and tackle problems during the project.

Below is a short list on the most important lessons learned during our project assignment:

- Collaboration and communication across different cultures and personalities
- Adaptation and flexibility during project management
- Planning and execution of a project
- The importance of motivation and dedication
- The importance of a risk management plan

In addition to valuable lessons learned, the team members have also unlearned previous mindsets, habits and knowledge. Since this project team consisted of people from different cultures and study areas, the members had to unlearn previous habits and adapt new ones.

Below is a short list on the most important lessons unlearned during our project assignment:

- Unlearning of previous work habits and the establishment of new ones
- Unlearning of previous communication habits and the establishment of new ones
- Unlearning of personal mindsets and adaptation of new ideas

---

## 7 Acknowledgements

We will give a special thanks to all the teaching assistants and students in the course TPK-5100 who has given us a lot of inspiration and information regarding this project assignment. In addition to this, we will especially thank the lecturer Bassam Hussein who has provided us with great lectures, presentations and literature related to project management. The information and handouts on Blackboard has also contributed significantly to our project, and we will thank all the individuals responsible for this.

The project assignment and lessons have given us the ability to learn and develop our project managing skills, and have contributed to our learning with great success. We have learned valuable lessons, and are grateful for this opportunity to work together as a team. We hope that our literature review and insights related to our project can contribute to others, and we look forward to potential future projects in different subjects or careers.

---

## Bibliography

- Hussein, Bassam (2018). *The Road to Success: Narratives and Insights from Real-Life Projects*. Fagbokforlaget.
- (2021). ‘Addressing Collaboration Challenges in Project-Based Learning: The Student’s Perspective’. In: *Education Sciences* 11.8. ISSN: 2227-7102. DOI: 10.3390/educsci11080434. URL: <https://www.mdpi.com/2227-7102/11/8/434>.

---

# Appendix

## A Pre Report



DEPARTMENT OF MECHANICAL AND INDUSTRIAL  
ENGINEERING

TPK5100 - APPLIED PROJECT MANAGEMENT

---

### Pre-Report Project Assignment

---

*Submitted by Group 21:*

Fredrik Gusfre, Mads Dørum, Thomas Lothe Dahl, Torbjørn Gjersøe

September, 2022

---

## Table of Contents

List of Figures	i
List of Tables	i
1 Introduction	1
2 Focus and importance	1
3 Communication, roles and responsibilities	1
4 Risk management and stakeholders	2
5 Success factors, criteria and skills needed	3
6 Project planning and organization	4
References	7
Appendix	8
A Cooperation Agreement . . . . .	8

## List of Figures

1 WBS . . . . .	5
2 Schedule . . . . .	6

## List of Tables

1 Roles and Responsibilities . . . . .	2
2 Risk Register . . . . .	2
3 Stakeholder mapping . . . . .	3
4 Success criteria used for evaluation of the project. . . . .	4

---

## 1 Introduction

The pre-report will contain detailed information regarding the project assignment, and how the group will succeed in order to complete a detailed and finished project report. The group have decided to conduct a theoretical review regarding important topics related to project management and project practitioners. The main topic will be how project practitioners can prepare themselves for the challenges of digital transformation, and what kind of competencies are needed in order to achieve successful project management during digital transformation.

The pre-report will contain a detailed overview regarding the process of writing the theoretical review, and what kind of roles and responsibilities each individual will have. In addition to this, the pre-report will include a project plan regarding the planning of the project. The project plan will include a project work breakdown structure (WBS), a project risk assessment plan and a project time schedule. The report will also include an overview of what type of skills are needed in order to produce our product, and a detailed plan for how the communication in the team will be done.

## 2 Focus and importance

Nowadays digital transformation is increasingly important both in projects and organizations. Technologies such as internet, social media, mobile, big data/analytics, artificial intelligence, automation, and robotics have made it possible to adapt more efficient and smart solutions in many industries. To be able to achieve success in these adaptations, it is crucial to have competent project practitioners that are familiar with the topic.

The focus of this review will be on how project practitioners and professionals can tackle the challenges of digital transformation, and what competencies are needed in order to address these challenges. This is a very relevant topic, especially after the Covid-19 pandemic where a lot of businesses and companies were forced to transition into digital solutions. A transition like this could be really challenging for project practitioners and organizations, because it would require a great deal of communication, collaboration and adaption of new solutions and structures. The literary review will try to gather and compare relevant literature regarding the challenges of digital transformation, and how project practitioners can tackle the transformation. We will also look at how this has been done during the covid-19 pandemic, and analyze experiences of project practitioners. The review will compare relevant literature, and finalize the best possible measures project practitioners could take in order to successfully achieve digital transformation. In addition to this, there will also be a focus on what kind of competencies are needed in order to succeed in this type of transformation.

## 3 Communication, roles and responsibilities

In order to succeed in the project, it is important to establish clear roles, responsibilities and methods of communication. Each individual involved in writing the review will have a clear role and responsibility, and will have to follow guidelines established in the beginning of the project. This way, we can ensure that each person knows exactly what to work on, when to complete the task, and how to communicate with other group members. The communication will be primarily through Microsoft teams and weekly meetings. If there are conflicts in the group, these will be addressed by additional meetings in order to address the problems. A plan for the work that needs to be done between the meetings will be established in the meetings, and the meetings will always include a summary of what was agreed upon.

Meetings will be held twice every week and following each meeting a meeting-report will be published on the communication platform. The meetings will be online meetings via Microsoft Teams or physical meetings at suitable locations. This is to ensure good meeting quality and information flow. At the end of each meeting the team will discuss if an extra meeting would be necessary.



The meeting report will be used to map out the progress the group has made, and to ensure that every individual is updated on the progress.

As mentioned earlier, each individual will have different roles in the project. This is important to secure good organization and structure of the project team. Below is the agreed upon roles and responsibilities, but collaboration and communication between the roles are encouraged and expected.

Role	Main Responsibilities
Project Manager	Planning, distribution of tasks, final deliverable, organization of the team
Project Member A	Communication channels, meeting reports, planning of meetings, information flow
Project Member B	Solving conflicts, motivation, supporting the team, collaboration
Project Member C	Finding databases, organization of literature, references, collaboration

Table 1: Roles and Responsibilities

## 4 Risk management and stakeholders

Risk management is extremely important in order to succeed in project management and in order to finish a project successfully. A detailed consideration of the risks involved in a project will ensure good preparation in case something unforeseen would happen during the project. In this case the risks involved will mainly be related to the project team, and the individuals involved in the project. A detailed overview of the risks involved will be provided, in addition to a risk assessment plan. There will also be a plan on how the project team could avoid these risks. If some of the risks would happen, a plan on what to do in order to tackle those events will also be included in this report. This will ensure that the project team will be able to handle unforeseen events in the best way possible, in order to successfully deliver the theoretical review and the final report.

The product in this case will be a theoretical review on how project practitioners can tackle the challenges regarding digital transformation in projects and businesses. There are numerous risks and challenges involved in this project, and a plan is necessary in order to tackle these risks. The main risks involved in this project will be communication problems, untrustworthy literature, failure to comply with deadlines, poor motivation and misunderstanding of the tasks given. The severity of these risk factors are different from each other, and the measures needed to be taken in order to avoid these risks needs to be addressed. The risk register below is used to evaluate each risk factor, how to tackle them, and the person responsible for handling the situation if it would occur.

Description of Risk	Risk Severity	Measures	Responsible Person	Status Update
Poor communication	Significant	Additional meetings	Person A	
Not completing the work	Critical	Redistribution of tasks, contact supervisor	Person B	
Untrustworthy literature	Critical	Removal of literature	Person C	
Conflicts within the group	Significant	Additional meetings, contact supervisor	Person D	
Misunderstanding of the assignment	Critical	Brainstorming, contact supervisor	Person A	
Failure to comply with deadlines	Critical	Contact supervisor	Person B	

Table 2: Risk Register

Each risk factor analyzed and found relevant in this project is listed in the table above, and the measures for tackling these risks if they are to happen. Most of the risks associated are linked to collaboration and communication between the members of the group, and will be handled by arranging meetings to prevent and address the problems. If things get worse, we will have to mail teachers or student assistants if necessary in order to tackle the risks. We will also establish consequences for members who do not do their share.

The stakeholders in this project will mainly be the individuals involved in producing the theoretical review, the readers of the published review and those who will use the information provided by the paper. One can also argue that the authors of the literature used in the review will be stakeholders in this project. It is important to include stakeholders during the project, but in this case it could be challenging to include every stakeholder involved. Of course, the group itself will be involved in the process, but the end users and the authors of the relevant literature would be difficult to include. The group will try to contact some of the authors in order to gain insight in the information provided in the literature used, and also try to include them in our project if possible.

In order to establish an overview of the stakeholders involved, and how to address them, a stakeholder mapping was done. This was done based on the example provided by Hussein (2018, pp. 53-54). Below is the stakeholder mapping done by the project team. An explanation of the different stakeholder groups, and how to address them, are provided by Hussein (2018, pp. 53-54).

Stakeholders	Interest	Influence	Group
Project group	Large	Critical	G1
End users	Large	Marginal	G3
Lecturer	Small	Critical	G2
Teaching assistants	Small	Marginal	G4

Table 3: Stakeholder mapping

## 5 Success factors, criteria and skills needed

A major point in deciding whether or not a project has been successful, it is recommended to define and agree upon success criteria before the project starts. By checking in with these after the project is finished it will be more measurable to figure out if it has succeeded or not. We are in a position where we are looking to bring success to our project as a whole, but also to the project management and to the success of the process. In order to establish a ground for success, it is important to have the knowledge of the most important success factors in our project. Below is the most important success factors agreed upon within the group.

- Good communication and collaboration
- Clear roles and responsibilities
- Good risk management
- Clear goals and project definition
- Good preparation and sufficient knowledge

One major factor in a project with time-limitation such as ours are good project planning. One measure we will make to ensure future success for the project is to create a cooperation agreement before we start the project in which we all will follow. In here we will lay rules for how to behave when working on the project. If there are any disagreements it will be stated how we plan to solve the task. A common goal will be agreed upon and we will state that we will do what we can to achieve this. Every participant will sign it and if someone are to break any of the rules set for the project, they will be given a punishment in line with the mistake. This is attached in Appendix A.

The information flow has been mentioned in Section 3, and communication is vital in order to achieve the desired goal and to have a healthy environment during the project. This is a vital point in reaching the project success that is desired and through the effective communication

between all parts of the team, and close cooperation this will increase the chances of delivering project success.

Through clear roles and responsibilities, and an effective risk management process we will increase our hopes of reaching project management success which is defined by in what grade the project has delivered in terms of time, costs, and the result being within the specifications decided. In line with this being a time-limited project we are dependent on a well documented and planned project. By working as an effective team and having a plan ready when we start, the process of which move to do next will be almost automatic. A clear goal and good planning will also lead to higher motivation among the participants and this is some success factors that are important in our project.

In order to satisfy our demands and anticipations for the project all participants should possess enough of the skills that we see as vital to deliver a satisfying project. By being structured and communicative we will be in line to deliver each of the tasks we are given on time and with a high enough quality. A skill that we will acquire during the semester is finding sufficient and trustworthy papers on the topic. In order to write a literature review we are going to have to go through a lot of papers, and by inhabiting a skill to find the correct papers that encompasses the parts and themes we are going to write about will be a vital part of the project's success, and is something we will improve and acquire along with the project.

In order to evaluate the project after delivery, the team has agreed upon the following success criteria:

Success criteria	How to measure	Methods of measurement
Good grade	Grading of the assignment	Objective
Achieving deadlines	—	Objective
Good collaboration	Reflection and discussion after the project completion	Subjective
Good learning outcome	Grading of the assignment and the exam and reflection	Objective and Subjective
Completion of the assignments	—	Objective
Accepted peer-review	Result of the peer-review	Objective

Table 4: Success criteria used for evaluation of the project.

## 6 Project planning and organization

To apply structure and to create a clear picture of the project as a whole, a work breakdown structure (WBS) was developed. This will be a helpful tool to aid the participants by breaking down the project into deliverables and work packages. This is a method to visualize the work needed, which ultimately will result in completion of the project. The WBS is also meant to contribute to better communication and create a common understanding between participants and stakeholders. Doing this early will furthermore help reducing the scope and complexity of the project.

## Work Breakdown Structure (WBS)

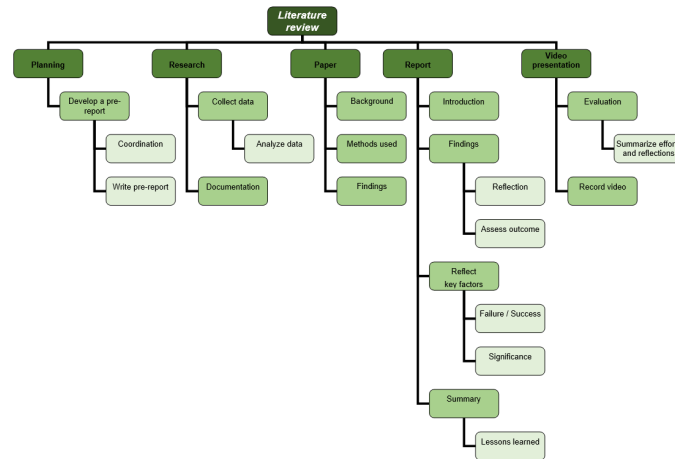


Figure 1: WBS

In addition to the work breakdown structure, a project schedule was developed to establish a clear overview of the project phase. To visualize the work even more, we added time-estimates to different deliverables and work packages. The schedule will help assure stakeholders that participants have an overview about the scope and time frame. Participants will focus on following the schedule developed, but potential deviation may occur. This will be reflected in the final report.

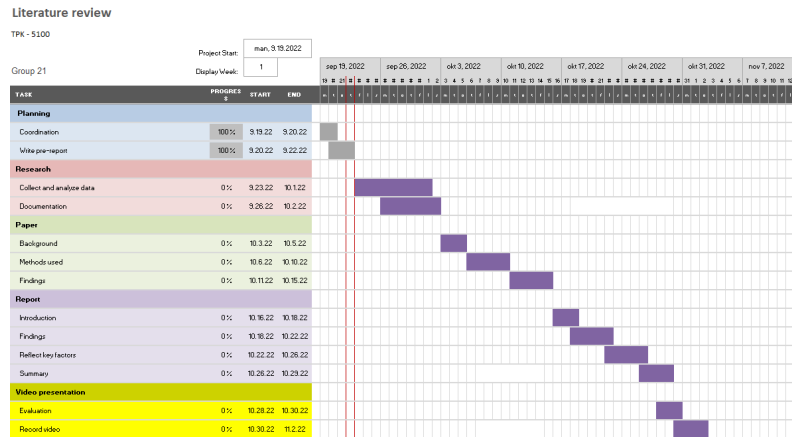


Figure 2: Schedule

---

## References

Hussein, Bassam A. (2016). *Veien til Suksess; Fortellinger og refleksjoner fra reelle prosjektcaser*. Fagbokforlaget.

---

## Appendix

### A Cooperation Agreement

#### Group 21 - Applied Project Management

##### Delivery

1. Everyone has a responsibility that the deliveries are of a quality to satisfy the requirements of minimum the grade B.
2. Meetings are being held in Microsoft Teams, if this will be physical this will be informed in time. General communication will go through Messenger.
3. Everyone meets at the scheduled time. If you are delayed, you will notify the group by Messenger. If the same person is delayed more than 15 minutes twice without notifying, this will be brought up during a discussion meeting in the group.
4. Every meeting we will create a goal for what is supposed to be done until the next meeting. The purpose is to secure progress in the delivery and stimulate cooperation.
5. Tasks related to the assignment will be done within the time limit the group has set. If a person is delayed with their task, this will be reported in time before the deadline.
6. Reports will be done and ready one week before the deadline. The remaining time will be used to polish and fix it.

##### Well-being

7. We want to have fun during the project! It is easier to work in an environment where there is good energy and atmosphere.
8. If one of the participants does not feel good, the person concerned will inform the others in the beginning of the meeting, such that the others can take this into consideration.
9. We put up milestones during the project to avoid a big workload during the last stages of the project. For the well-being in the group, it is important that everyone delivers and do their part of the work at the agreed internally deadlines.

##### Learning

10. The cooperation agreement can be revised if needed, and it needs majority for a change to come through.

##### Signatures:

*Thomas Lothe Dahl*    *Fredrik Jusfse*  
*Mads Dørum*        *Torbjørn Gjersøe*

---

## B Literature Review



DEPARTMENT OF MECHANICAL AND INDUSTRIAL  
ENGINEERING

TPK5100 - APPLIED PROJECT MANAGEMENT

---

### Project Assignment - Literature Review

---

*Submitted by Group 21:*  
Fredrik Gusfre, Mads Dørum, Thomas Lothe Dahl, Torbjørn Gjersøe

September, 2022



---

## Table of Contents

<b>List of Figures</b>	<b>i</b>
<b>List of Tables</b>	<b>i</b>
<b>1 Abstract</b>	<b>1</b>
<b>2 Introduction</b>	<b>2</b>
<b>3 Background and importance</b>	<b>3</b>
3.1 Digital Transformation . . . . .	3
3.2 Digital Transformation and Project Management . . . . .	3
<b>4 Methods</b>	<b>5</b>
4.1 Literature Search . . . . .	5
4.2 Literature Analysis and Screening . . . . .	5
4.3 Writing of the Review . . . . .	6
<b>5 Discussion</b>	<b>7</b>
<b>6 Conclusion</b>	<b>9</b>

## List of Figures

1 Top six skills needed in digital age (PMI 2018) . . . . .	3
2 Literature analysis and screening. . . . .	5
3 Success Factors in Digital Transformation. . . . .	8

## List of Tables

1 Databases and key words. . . . .	5
2 Summary of our findings. . . . .	9

---

## 1 Abstract

The purpose of this literary review is to research and review existing literature related to digital transformation and project management, and to find and structure the competencies needed to achieve successful project management in this field. In addition to this, the review will highlight possible challenges and how to address them based on the existing literature and research. The review will also look at how digital transformation can benefit the field of project management, if implemented correctly.

In this review, we have gathered and compared relevant literature from multiple databases to conduct the literary review. Some examples of the databases used are Google Scholar, Researchgate and Sciendo. These are all scientific websites with large numbers of academic articles and research papers. Relevant key-words were used in order to narrow down and focus in on the most relevant articles and research papers, and most of the articles used in this review are peer-reviewed. The full overview of the sources used will be included at the end of the review. In addition to relevant articles, we have also studied real life cases relevant to the topic to gain a better understanding of the subject matter.

When conducting this literary review, we discovered that there are multiple challenges related to project management during digital transformation of an organization. The challenges could be different for each case, but there are some commonalities. Digital transformation could also come to good use in project management, but there are certain skills needed to achieve successful transformation and project management. A detailed overview of the challenges, skills needed, and commonalities found will be included at the end of this review.

The main findings in this review is that in order to succeed with digital transformation, it is crucial to establish a good project plan in the beginning of the project. The ability to adapt during the project phase is also important, both project management, the organization, and also the end users. A digital transformation could often result in the need of a large restructuring of the organization, and can therefore compare to a restructuring or innovation project. Good cooperation with stakeholders and owners are also crucial to succeed. The evaluation of a succeeded digital transformation project could be difficult to conclude, mainly because of the uncertainties related to such a large restructuring or innovation project. In addition to this, project practitioners can largely benefit from the digital transformation if the new technology are implemented correctly. It is also important for project practitioners to develop a set of skills, and knowledge about digital solutions and processes.

---

## 2 Introduction

Compared to earlier years, digital solutions are becoming increasingly important every year. Almost all industries across multiple sectors are adapting digital technology in their businesses, and each year the availability of this technology increase. During Covid-19, the implementation of digital solutions was accelerated in many organizations, and in industry 4.0 it will be even more important than before. Some examples of digital solutions could be an online maintenance database, automatic customer service, or online cloud storage. The purpose of adapting a digital solution is commonly to better efficiency, flexibility, financial gains, and/or increase value creation. These are just a few examples of many possible digital solutions for numerous organizations. An adaption of one or a few digital solution can not be classified as a digital transformation. The definition of a digital transformation is widely discussed, but the main commonality is that adaptations of digital solutions has to induce a major change in the organizational structure, communication, and/or require reinvention of many (if not all) facets of an organization in order to be defined as a digital transformation project according to Pratt and Sparapani (2021). Digital transformation does not only affect organizations and companies, but also the project management discipline. New technology can introduce new ways of managing projects, and give raise to both opportunities and challenges for project practitioners.

To achieve successful digital transformation, good project management and certain skill sets are needed. A digital transformation of an organization will often require establishment of multiple projects, to complete the transformation in a structured way. Digital transformation projects can be challenging, and there are multiple obstacles and challenges that could occur. Project practitioners are therefore needed to acquire certain skills to tackle digital transformation and to gain an insight in how to overcome challenges during the projects. Project management is widely researched and discussed, and there are numerous articles covering the topic of project management during digital transformation. Different skill sets are needed for different situations and projects, but there are some commonalities. This review will focus on existing literature and research and summarize the information and research most relevant for project practitioners during digital transformation.

Each digital transformation project is different depending on the industry and organization, but there are some commonalities. In this review we have gathered information along numerous kinds of industries and organizations, and the literature used are based on digital transformation projects from all kinds of organizations. The purpose of this review is therefore to establish a common base on how project practitioners can tackle the challenges of digital transformation, and what kind of challenges that could occur during the implementation of new digital technologies. There will also be a summary of the most important skill sets needed in order to tackle the transformation. In addition to this, we will highlight what kind of opportunities digital transformation gives the project management discipline.

---

## 3 Background and importance

### 3.1 Digital Transformation

According to (Bloomberg 2018), digital transformation corresponds to “the customer-driven strategic business transformation that requires cross-cutting organizational change as well as the implementation of digital technologies”. It is defined as the variations that digital technologies can influence in business model of a company. Mergel et al. (2019) says that it introduces new ways of collaborating with stakeholders, creating new frameworks of service delivering and building new types of relationships in the public sector.

(Grab et al. 2019) points to firms competing in the same market and how the digital transformation can act as power shifting between them. Through the companies’ business model new technologies and ideas are being commercialized. (Chesbrough et al. 2006) In order to transform the business model (Berghaus and Back 2016) points to how the digital transformation can be used to improve the companies’ processing and explore the digital innovation through the use of these technologies. As products and services are both offered online and offline, the ability to keep competing and surviving in the market of today the digital transformation has a vital need of using new technologies. (Mergel et al. 2019)

### 3.2 Digital Transformation and Project Management

Every successful digital transformation project requires and strives for effective and efficient project management. The technology is rapidly changing in today’s market and the skills of the project managers needs to be upgraded as well in order to handle the technological advances. The project managers need to be provided with enough and precise data about the new technologies. The better they are at understanding the new technologies and methodologies, the better results they can achieve. The organizations that provide enough training and support for their project managers and empower them with information, can better handle the digital transformation. (Prashara, 2019).

The Project Management Institute (PMI) claims that in the future, the project managers need to focus more on the digital age and accordingly develop six skills. These skills are: 1 -data science, 2 - an innovative mindset, 3 - security and privacy knowledge, 4 - legal and regulatory compliance knowledge, 5 - the ability to make data-driven decisions, 6 - collaborative leadership



Figure 1: Top six skills needed in digital age (PMI 2018)

Data science skills is about “the ability to extract knowledge from data with the purpose of improving project outcomes” (Viter 2019). Collecting data by project management and presenting them using digital tools and technology like flow- and Gantt charts (Babordina et al. 2020). Based on this data, keeping track of the projects and finding the deviations, like cost overruns would be easier (Viter 2019; Kerzner 2017). The complexity of and inside projects are also benefited from the incorporation of these technologies and tools (Bajwa and Deichmann 2018).

To have an innovative mindset means that you are open to change and test new technologies without being afraid of it failing. If the organizations are willing to take a risk with new technologies and invest in them the project managers with innovative mindsets will thrive and be able to really show

---

their abilities. However, with the increasing digitalization of companies and processes, the security and privacy knowledge are a concern that needs to be dealt with (Viter 2019). As cybersecurity expert Nick Ismael states " *Without solid knowledge of security, your projects could open your organization to crippling threats*", the even more important it becomes for the project managers to be adaptable and able to handle and have a solution for this. (Ismail 2017). As the projects are more digitalized, the dependency on digital technologies and information are highly increasing, and the ability to keep these under control are of vital importance.

Every project manager needs legal and regulatory compliance knowledge in order to align the phases and processes of the project in accordance with the organization's established rules and regulations. The inclusion of data-usage in the project-levels aids the project managers in better in their decision making and deliverables (Viter 2019). The feedback-giving and task-assigning will become much more effortless by implementing digital tools for the project managers (Mcabee 2019). These data-driven decisions will help and aid the managers in making fewer mistakes and more often save time and possible costs from not being able to make decisions based off available data. The collaborative leadership skills are necessary for project managers to be able to have cross-functional communication with the organization and encourage them to take the risk of digital transformation (Viter 2019).

Project management is being changed in many ways with digitalization. The communication and collaboration between teams and divisions are becoming much more efficient with the advancing technologies, and through automation the project managers have more time focusing on strategy optimization and project delivery. Through the implementation of data-driven decision making and analysis the decisions are being made faster and better which leads to higher success rates of projects. (Mcabee 2019). Swaminathan 2017 points to the importance and responsibility that project managers have in their decision making during digitalization projects. "So for a project leader to become successful, they must be laser-focused on the outcome, laser-focused on the customer needs, and constantly asking whether or not there are changes that they need to make to the team" (World Finance 2019a).

"*Today, projects are talked about as strategy: delivery of strategy. That is the real project manager's role*" (World Finance 2019b). The project managers of the future have to require new skills because the line between strategy and delivering is unclear.. (World Finance 2019a) insist that to be an effective leader, the project manager have to be more interpersonal, and have that emotional intelligence to understand what's needed where the most important skills to learn are the understanding of customers, being able to take risks and handling the consequences.

## 4 Methods

### 4.1 Literature Search

In order to write this literature review, there was a need for good quality literature and research papers. This review is a qualitative review, meaning that the focus when conducting the literature search was to find a few papers with high quality and conduct a careful analysis of the research provided. In order to find literature, multiple research databases were used. The main databases used were Google Scholar, Researchgate and Sciendo. All of these are high quality databases with a lot of research papers and reviews, and a lot of the literature included are peer reviewed. In order to find the most relevant literature, key words were used when conducting the search. The main key words used was "project management", "digital transformation", "project management and digital transformation" and a combination of these. In the search, a helpful way of finding more relevant literature was to look at references used in the different articles.

Main Literature Databases	Main Key Words
Google Scholar, Researchgate, Sciendo, Sciencedirect	"Project management", "Digital transformation", "Digital project management", "Digital transformation project"

Table 1: Databases and key words.

### 4.2 Literature Analysis and Screening

After the search process, the screening and analysis of the literature began. This was done to secure good quality literature for our qualitative literary review. The literature search led to a large amount of collected data. So, the first thing in the analysis and screening process was to reduce the data and select the most suitable literature. Starting the process with skimming through the abstract of the articles, to filter out the less relevant literature, as well as avoiding duplication of data. Further, a more detailed examination of the remaining data was conducted. This was done in 5 main steps, illustrated below. During the detailed examination, whole articles were read in order to gain deeper understanding of the topics involved.

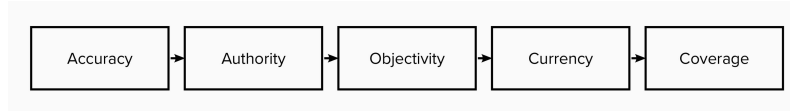


Figure 2: Literature analysis and screening.

In the first step we checked the accuracy of the literature, and if the literature was fit for the purpose of the review. We also ensured that the information was trustworthy and verified this by comparing the literature with other texts and information. The next step was to verify the competency of the authors, and to figure out where the literature was published. The third step was to figure out if the information provided was biased, and if it was objective enough for our purpose. Further, we made sure that the literature used was up to date, and that the information provided met the need of our review. These steps are all based on the article "Literature Review - Finding the Resources" from the City University of Hong Kong (2022). All participants were involved in this process, doing it independently. This was a way to ensure that there were no selection errors, but also so that all participants would be well informed on the topics. When an article was accepted, it was saved in a literature database created for this project. This was done in order to present the data and make it more accessible and understandable. The literature selected were also sorted based on the relevance of the topic.

---

### 4.3 Writing of the Review

With the screening, analyzing, and organizing in place the actual writing and purpose of the review could continue in a much more effective way. A structured plan on how the literature review would be organized was developed, with key words on important topics that would be included. In addition to this, a list was also made. A list containing the most important information gathered when reading the literature, giving participants a better base to start writing.

The process of writing the review was initially divided into parts for each team member to complete. One was responsible for the introduction and the abstract, another was responsible for the methods, and so on. Everyone was responsible for the discussion part of the literature, to make sure that every important topic was covered. To summarize the review, a conclusion was made in the end to highlight the findings and conclusions of the review. The last thing that was done, was to check the references, and that the referencing was done correctly according to the Harvard referencing style.

When the first draft of the literature review was written, everyone in the team read through the draft in order to quality check both the spelling and the writing itself. If someone in the team disagreed on something, this was discussed at the weekly meetings withing the project team. There were multiple drafts of the review before the final and complete review was done. The reason for the different drafts were to make sure that every important finding of the literature analysis and screening was included in the literary review.

---

## 5 Discussion

Digital transformation can be challenging both for organizations, project management, and other stakeholders. As mentioned earlier, a digital transformation often induce a major change in the organizational structure, communication, and/or require reinvention of many, if not all, facets of an organization according to Pratt and Sparapani (2021). Similar challenges are also highlighted elsewhere. Marnewick and Marnewick (2022) mentions that digital transformation provides many challenges such as the overwhelming presence of technology, the capacity to obtain benefits from digital technologies, emerging capabilities, cultural change, new forms of organizational structures such as digital infrastructure, new ways of cooperation and digital inequalities. This means that in order to succeed with the transformation, there is a need for good strategy in management of the process. In order to stay competitive in today's market, it is even more important to adapt to digital solutions, and in certain domains complete a digital transformation. To overcome the barriers in the transformation process, structural changes must be implemented. However, these changes not only lead to positive organizational effects (which are often accompanied by changes at the individual or social level), but may also be associated with undesirable results (Vial, 2019). There is a wide discussion on how to succeed with such a transformation, and how project practitioners and managers can use their position in order to help with the transition. A digital transformation could often be considered as a restructuring project, or a digital innovation project according to Barthel and Hess (2019). In these kinds of projects there is often a need for reorganization and innovation across many departments in the organization. A digital transformation often bypass the IT department of the companies, and include both the business department, HR and other departments (Barthel and Hess, 2019). Good collaboration and communication across different departments are therefor crucial in a digital transformation. This applies not only to project practitioners, but also within the organization itself. There is also a lot of uncertainty, especially in the beginning phase, related to digital transformation according to Barthel and Hess (2019). In order to tackle these uncertainties, an agile and more flexible approach to project management seems to be a success factor in many cases. In the case study "Are Digital Transformation Projects Special" by Barthel and Hess (2019), a purposeful application of agile methods was considered a success factor in all the cases studied. This seems to be especially important if there is not a specified target, but rather a more specified direction of the transformation as emphasised by Barthel and Hess (2019). This correlates with other literature. As new technologies are adopted in all project-based industries, their use is breaking old rules, enabling more rapid and more agile forms of organizing (Whyte, Stasis and Lindkvist, 2016). Aswell as Khoza and Marnewick (2020), where an agile approach is mentioned as the best way to deliver new technologies as it is more successful than the traditional waterfall approach. Agile practices appear increasingly customary, offering an impulse for the hybridization of project management methodologies in various organizations (Kozarkiewicz, 2020). In addition to this, it is important to move from functional silos to cross functional teams during a digital transformation process (Saarikko et al., 2020). This is to secure good collaboration and communication between the different departments involved in the process of digital transformation.

The digital transformation can also provide project practitioners with new tools, to help manage and organize projects and project teams. The rise of artificial intelligence and other technological advances give rise to new and exciting technology that could come to use for project practitioners. A digital communication platform, or digital planning solutions can easily make planning and communicating with stakeholders and team members easier. In order to achieve these benefits from a practitioners point of view, it is important to have the necessary skills to operate this new technology. With every new technology comes new challenges. If the users do not have the skills to use these new solutions, the digital solutions might not be so rewarding as it could be. Therefore, project managers need to have knowledge about technology trends and how technology can be used as a tool and also how to optimise techniques using technology (Marnewick and Marnewick, 2022). Another challenge for project practitioners could be to decide what kind of technologies are suited for different types of projects. So called digital intelligence, emphasized by Marnewick and Marnewick (2022), is a necessary skill needed by project practitioners to distinguish between the various technologies, and to determine which one is applicable to certain projects and environments (Marnewick and Marnewick, 2022).



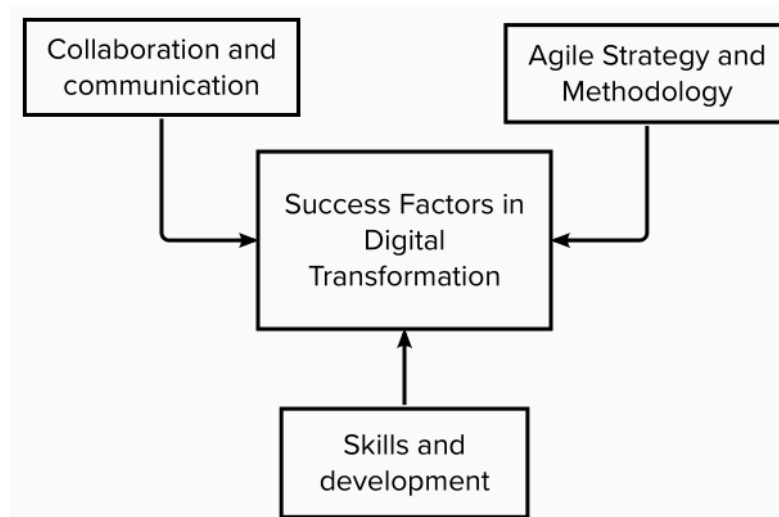


Figure 3: Success Factors in Digital Transformation.

The focus on this review was to gain an insight in how project practitioners can prepare for the challenges of digital transformation, and what kind of competencies are needed to support project managers and organizations to tackle digital transformation. The main challenges of digital transformation in an organizational point of view is discovered to be lack of communication and collaboration between the different departments involved in the transformation. In addition to this, a silo oriented project approach seems to be a disadvantage during digital transformation. A more agile and cross functional approach seems to be more advantageous in relation to digital transformation and project management (Saarikko et al., 2020). A digital transformation of an organization often require a new business model or structure, and employees need to adapt new ways of working. This can be a huge challenge if not addressed properly. This emphasizes the importance of involving stakeholders and end users during the transformation, and the need for technological knowledge and flexibility. When adapting new technological solutions in a digital transformation, it is important to understand what the transformation will contribute to, both to the organization and value creation. Another challenge in an organizational point of view is that employees can be resistant to the transformation due to the fear of losing their jobs. It is therefore critical for leaders and project managers to recognize those fears, and emphasize the opportunities for employees to upgrade their expertise (Tabrizi et al., 2019). According to Hoch (2017), employee push back is one of the big challenges for organizations during digital transformation. In order to address this challenge, it is important to establish a reason for the digital transformation, and communicate this to employees and stakeholders. Another challenge related to digital transformation in an organizational point of view is limited budget and financial troubles. A digital transformation can be considered as an innovation project (Barthel and Hess, 2019). This means that there is a lot of uncertainty related to the final financial cost of the transformation, and a large and sufficient budget are therefore crucial to succeed with a digital transformation. Another challenge in an organizational point of view are complicated technology and uncertainties on how to use and implement the new digital solutions. In order to tackle this, it is important to include the stakeholders and end users during the development and implementation phase. Communication and collaboration with stakeholders and end users are also important in order to achieve a successful digital transformation.

---

## 6 Conclusion

This review had focus on examining the literature about the challenges of digital transformation in both an organizational point of view, but also from the viewpoint of project practitioners. As we discovered, there are numerous challenges related to digital transformation. The most relevant and important challenges are the large organizational change that a digital transformation can require. This emphasizes the need for great communication and collaboration across many departments in the organization, and a need for agile and cross functional project management. Another challenge discovered are the probability of resistance in the work force, and the challenge of transforming the organizational traditions and culture. In order to tackle these challenges, good communication with stakeholders and end users are crucial. It is also important to communicate the need for digital transformation, so that the stakeholders understand the gains and potentials of such a radical change. It is also discovered that a limited budget can be a challenge during a digital transformation, mainly because of the financial uncertainties related to development and implementations of digital solutions and restructuring of the organization. To tackle this, it is important to develop a proper strategy for the digital transformation, and to invest properly in the technology and transformation process.

Summary of our findings	
Challenges	Success Factors
The need for organizational change	Agile project management
Limited budget	Sufficient budget
Technological uncertainties	Involvement of stakeholders and end users
Employee pushback	Communication and collaboration
Uncertainties of deadlines	Good information flow
Communication problems	Cross functional teams

Table 2: Summary of our findings.

Project practitioners can benefit from digital transformation in a project practitioners point of view in many ways. New technology makes the possibility of communication and collaboration with stakeholders and team members more available. In addition to this, digital transformation can make planning of resources and time scheduling easier. Even though digital transformation can make project management easier, new technology can introduce unforeseen challenges. In order to tackle this, it is important for project practitioners to develop a set of skills. The most important of these skills according to The Project Management Institute (PMI), as illustrated in Figure 1, are data science skills, innovative mindset, security and privacy knowledge, legal and regulatory compliance knowledge, ability to make data-driven decisions and collaborative leadership skills.

## References

- Arnesen, C. and Sinfield M. G. M. (2020). 'Digital Transformation in Projects'. Masters thesis. University of Agder.
- Babordina, O. A. et al. (2020). 'Digitalization and Project Management Method in Improving Efficiency of Drilling Wells Construction'. In: *Engineering Economics: Decisions and Solutions from Eurasian Perspective*. Ed. by Svetlana Igorevna Ashmarina, Valentina Vyacheslavovna Mantulenko and Marek Vochozka. Cham: Springer International Publishing, pp. 348–353.
- Bajwa, Ali and Robin Deichmann (2018). 'How Digitalization influences Project Management Acceptance of Cloud-based Project Management Tools'. MA thesis.
- Barthel, P. and Hess T. (2019). 'Are Digital Transformation Projects Special?' In: *PACIS 2019 Proceedings*. URL: <https://aisel.aisnet.org/pacis2019/30>.
- Berghaus, Sabine and Andrea Back (2016). 'Stages in Digital Business Transformation: Results of an Empirical Maturity Study.' In: *MCIS*, p. 22.
- Bloomberg, Jason (2018). 'Digitization, digitalization, and digital transformation: confuse them at your peril'. In: *Forbes* 28, p. 2019.
- Chesbrough, Henry (2010). 'Business model innovation: opportunities and barriers'. In: *Long range planning* 43.2-3, pp. 354–363.
- Chesbrough, Henry, Wim Vanhaverbeke and Joel West (2006). *Open innovation: Researching a new paradigm*. Oxford University Press on Demand.
- Grab, Benjamin, Marieta Olaru and Roxana Maria Gavril (2019). 'The Impact of Digital Transformation on Strategic Business Management'. In: *Ecoforum Journal* 8.1.
- Hoch, E. (2017). *Top 5 Digital Transformation Challenges (and How to Overcome Them)*. URL: <https://www.iotforall.com/top-5-digital-transformation-challenges> (visited on 13th Oct. 2022).
- Hong Kong, City University of (2022). *Literature Review - Finding the Resources*. URL: <https://libguides.library.cityu.edu.hk/litreview> (visited on 11th Oct. 2022).
- Hussein, B. (2018). *The road to success, Narratives and Insights from Real-life Projects*. Bergen: Fagbokforlaget.
- Hussein, B., Hafselld K.H.J. and Rauzy A.R. (2022). 'Government inter-organizational, digital transformation projects: five key lessons learned from a Norwegian case study'. In: *Procedia Computer Science* ,196, pp. 910–919. DOI: <https://doi.org/10.1016/j.procs.2021.12.092>.
- Ismail, Nick (2017). *What project managers need to know about cyber security*. <https://www.information-age.com/project-managers-need-know-cyber-security-123465431/>. Accessed: 2022-10-20.
- Jennifer Whyte, Angelos Stasis and Carmel Lindkvist (2016). 'Managing change in the delivery of complex projects: Configuration management, asset information and 'big data''. In: *International Journal of Project Management* 34.2, pp. 339–351. DOI: <https://doi.org/10.1016/j.ijproman.2015.02.006>.
- Kerzner, Harold (2017). *Project Management: A Systems Approach to Planning, Scheduling, and Controlling*. John Wiley & Sons.
- Khan, M.A. (2020). 'THE IMPACT OF PROJECT MANAGEMENT STYLES ON DIGITAL TRANSFORMATION: A CASE STUDY OF AN IT SERVICES COMPANY'. In: *International Journal of Project Management* 4.1, pp. 1–9. DOI: <https://doi.org/10.47672/ijpm.487>.
- Khoza, Lucas and Carl Marnewick (2020). 'Waterfall and Agile information system project success rates – A South African perspective'. In: *South African Computer Journal* 32.1. DOI: <https://doi.org/10.18489/sacj.v32i1.683>.
- Koelman, J. et al. (2019). *Decoding digital transformation in construction*. URL: <https://www.mckinsey.com/capabilities/operations/our-insights/decoding-digital-transformation-in-construction> (visited on 12th Oct. 2022).
- Kozarkiewicz, A. (2020). 'General and Specific: The Impact of Digital Transformation on Project Processes and Management Methods'. In: *Foundations of Management* ,12(1), pp. 237–248. DOI: <https://doi.org/10.2478/fman-2020-0018>.
- Marnewick, C. and Marnewick L. A. (2022). 'Digitalization of project management: Opportunities in research and practice'. In: *Project Leadership and Society* ,3. DOI: <https://doi.org/10.1016/j.plas.2022.100061>.

- 
- Mcabee, Jeremy (2019). *4 Ways Digital Transformation Is Changing Project Management*. <https://www.wrike.com/blog/digital-transformation-changing-project-management/>. Accessed: 2022-10-19.
- Mergel, Ines, Noella Edelmann and Nathalie Haug (2019). 'Defining digital transformation: Results from expert interviews'. In: *Government Information Quarterly* 36.4, p. 101385.
- PMI (2018). *The Project Manager of the Future: Developing digital-age project management skills to thrive in disruptive times*. <https://www.pmi.org/learning/thought-leadership/pulse/the-project-manager-of-the-future>. Accessed: 2022-10-17.
- Prashara, Sunil (2019). *PMI: project managers are key to a successful digital transformation*. <https://www.europeanceo.com/business-and-management/pmi-project-managers-are-key-to-a-successful-digital-transformation/>. Accessed: 2022-10-20.
- Pratt, K. M. and Sparapani J. (2021). *What Is Digital Transformation?* URL: <https://www.techtarget.com/searchcio/definition/digital-transformation> (visited on 11th Oct. 2022).
- Saarikko, T., Westgren H.U. and Blomquist T. (2020). 'Digital transformation: Five recommendations for the digitally conscious firm'. In: *Business Horizons* ,63.(6), pp. 825–839. DOI: <https://doi.org/10.1016/j.bushor.2020.07.005>.
- Sow, M. and Aborbie S. (2018). 'Impact of Leadership on Digital Transformation'. In: *Business and Economic Research* ,8, p. 139. DOI: <https://doi.org/10.5296/ber.v8i3.13368>.
- Swaminathan, Anand (2017). *Digital Transformation — Why It Matters*. <https://www.pmi.org/learning/training-development/projectified-podcast/podcasts/digital-transformation-why-it-matters>. Accessed: 2022-10-18.
- Tabrizi, B. et al. (2019). *Digital Transformation Is Not About Technology*. URL: <https://bluecirclemarketing.com/wp-content/uploads/2019/07/Digital-Transformation-Is-Not-About-Technology.pdf> (visited on 12th Oct. 2022).
- Vial, Gregory (2019). 'Understanding digital transformation: A review and a research agenda'. In: *The Journal of Strategic Information Systems* ,28.2, pp. 118–144. DOI: <https://doi.org/10.1016/j.jsis.2019.01.003>.
- Viter, Iryna (2019). *PMI Named Top Skills for Digital Project Managers*. <https://www.pmcolum.com/top-skills-for-digital-project-managers/>. Accessed: 2022-10-18.
- (2020). *280+ Project Managers Name Their Biggest Challenges of 2020*. <https://www.forecastapp/blog/challenges-of-project-management>. Accessed: 2022-10-17.
- World Finance (2019a). 'Laser-focused on outcome': *The changing role of the project manager*. <https://www.worldfinance.com/videos/laser-focused-on-outcome-the-changing-role-of-the-project-manager>. Accessed: 2022-10-17.
- (2019b). *How digital transformation is disrupting project management and leaders*. <https://www.worldfinance.com/videos/how-digital-transformation-is-disrupting-project-management-and-leaders>. Accessed: 2022-10-18.
-

---

## C Video Link

URL:

[https://ntnu.blackboard.com/webapps/assignment/uploadAssignment?content\\_id=\\_1872503\\_1&course\\_id=\\_37263\\_1&group\\_id=&mode=view](https://ntnu.blackboard.com/webapps/assignment/uploadAssignment?content_id=_1872503_1&course_id=_37263_1&group_id=&mode=view)