

Kaja Jørgensen

Project Management for Successful Implementation of Digital Transformation Projects and Sustainable Objectives

Master's thesis in Project Management

Supervisor: Nora Johanne Klungseth

June 2023

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Abstract

This master thesis is conducted based on a literature review and interviews where the main research area is the intersection between project management, digital transformation, and sustainability. The aim was to find managerial practices for project managers to implement to succeed with digital transformation initiatives.

Four research questions, one main research question and three sub-questions, were formulated to fulfill the aim of this thesis. The main research question explored managerial practices in digital transformation and sustainability projects. The first research question (RQ1) investigated the role of sustainability in digital transformation projects. The last two research questions (RQ2 and RQ3) looked deeper into the project manager role in these projects, exploring necessary skills, background, and experience.

A thorough literature review and eleven interviews were conducted to help answer these research questions. The literature review was a semi-structured qualitative approach, using relevant keywords to find articles that could answer these questions. Over 1000 articles were found using keywords but were narrowed down to 34 peer-review articles that met the requirements. All eleven interviews were conducted online with professional project management practitioners with diverse backgrounds. The interviews were semi-structured to allow for fluent conversation, with open-ended questions to allow the interview objects to go into detail about their experiences with digital transformation and sustainability.

The outcome of this master thesis shows that there are many managerial practices that project managers can implement to help succeed in digital transformation projects while considering sustainability. Sustainability is a driver for digital transformation, impacting the project's economic, social, and environmental outcomes. The managerial practices reveal the complexity of the project manager role. The project manager role is demanding and expects a lot from the project manager, acknowledging the need for a person with motivation, interest, and project and change competence to succeed with digital transformation projects.

Sammendrag

I denne masteroppgaven er det gjennomført en litteraturgjennomgang og intervjuer hvor hovedforskningsområdet er skjæringspunktet mellom prosjektledelse, digital transformasjon og bærekraft. Målet var å finne ledelsespraksiser for prosjektledere til å implementere for og lykkes med digitale transformasjonsinitiativer.

Fire forskningsspørsmål, ett hovedspørsmål og tre delspørsmål, ble formulert for å oppfylle formålet med denne oppgaven. Hovedforskningsspørsmålet utforsket ledelsespraksiser i digital transformasjon- og bærekraftsprosjekter. Det første forskningsspørsmålet (RQ1) undersøkte bærekraft sin rolle i digitale transformasjonsprosjekter. De to siste forskningsspørsmålene (RQ2 og RQ3) så dypere inn i prosjektlederrollen i denne type prosjekt, og utforsket nødvendige ferdigheter, bakgrunner og erfaringer.

En grundig litteraturgjennomgang og elleve intervjuer ble gjennomført for å hjelpe til med å besvare disse forskningsspørsmålene. Det ble gjennomført en semi-strukturert kvalitativ tilnærming til litteratursøket, som brukte relevante nøkkelord for å finne artikler som kunne hjelpe å svare på forskningsspørsmålene. Over 1000 artikler ble funnet med søkeord, men ble begrenset til 34 fagvurderte artikler som oppfylte kravene som var satt på forhånd. Alle de elleve intervjuene ble utført online med profesjonelle prosjektledere med ulik bakgrunn. Intervjuene var semi-strukturerte for å tillate en flytende samtale, med åpne spørsmål for å la intervjuobjektene gå i detalj om deres erfaringer med digital transformasjon og bærekraft.

Resultatet av denne masteroppgaven viser at det er mange ledelsespraksiser som prosjektledere kan implementere for å hjelpe til med og lykkes i digitale transformasjonsprosjekter mens de også ser på bærekraft. Bærekraft er en driver for digital transformasjon, og påvirker prosjektets økonomiske, sosiale og miljømessige målsetninger. Videre avslører lederpraksisene kompleksiteten i prosjektlederrollen. Prosjektlederrollen er krevende og forventer mye av prosjektlederen. Det erkjennes at behovet for en person med motivasjon, interesse og prosjekt- og endringskompetanse er nødvendig for å lykkes i digital transformasjons prosjekt.

Preface

This master thesis was written by Kaja Jørgensen – a master student in Project Management, during the Spring of 2023. The thesis was written as a part of the course TPK4920 - Master's Thesis in Project Management, specialization of Production and Quality Engineering, at the Department of Mechanical and Industrial Engineering at the Norwegian University of Science and Technology (NTNU).

I would like to thank my supervisor Nora Johanne Klungseth for her contribution throughout the last year, with both my project thesis and master thesis. Her contributions with valuable knowledge, good conversations, and beneficial discussions and feedback have been incredibly motivating and important to me in writing this paper. In addition, she helped me with the hunt for potential interview objects.

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1 Introduction

Customers are pushing businesses above and beyond to meet their changing demands. In 2019, Savić said, "The pace of change will never be this slow again," and emphasized how businesses must find ways to adapt, react, and remain resilient to the coming disruptive changes (Savić, 2019). Organizations are forced to be agile and stay one step ahead to keep their competitive position and outperform new market entrants. At the same time, technology is raising the bar, increasing customer expectations even further (BUSINESS REALITY CHECK, n.d.). For organizations to remain competitive, the literature suggests that it is necessary to incorporate digital technologies and sustainability into the business model to meet the customers' needs and wants. argues that digital transformation projects can increase organizational resilience, improving their ability to recover and grow under uncertain conditions and in a dynamic environment by implementing digital technologies and sustainable objectives into the organizational culture, strategy, and business model (Hajishirzi et al., 2022).

1.1.1 Project and Project Management

In organizations, changes are often introduced through projects (Toljaga-Nikolić et al., 2020). A *project* can be defined as "several activities that aim to meet business goals while using their internal resources" (Bakar et al. (2011) in Vrchota et al., 2020). A project is often characterized by its uniqueness, uncertainty, and risk (Vrchota et al., 2020). Silvius et al. (2012) describe projects as temporary organizations related to non-temporary "permanent" organizations and realize changes that benefit the strategy or goals of such organizations. They often have economic, social, and environmental impacts that outlast the set time frame for the project (Project Management Institute (PMI), 2008). Therefore, successful internal and external projects result in more competitive advantage, seeing that project failures are burdens for every organization as they either negatively impact the organization's competitiveness or efficiency in the long term (Vrchota et al., 2020).

In projects, the project managers are seen as responsible for completing and efficiently implementing projects within the organization (Vrchota et al., 2020). PMI (2008) defines *project management* as "the application of knowledge skills, tools, and techniques to project activities to meet the project requirements." They can be used as tools for achieving the business strategy (Vrchota et al., 2020), and their tasks involve using processes, methods, skills, knowledge, and expertise to achieve specific project goals according to the set criteria (Bannikov et al., 2022).

Digital transformation projects allow organizations to implement digital technologies and sustainability strategically, changing the strategy and business model to fit the organization's and market's disruptive changes. These projects are often vast and complex, and it is crucial to have competent project management for them to be successfully implemented (Feroz et al., 2021). Effective project management is essential when implementing digital transformation projects, as the projects require a framework to handle the complex and multifaceted nature of this type of project (Bannikov et al., 2022).

1.1.2 Digital Transformation

Digital transformation projects can help organizations maintain their competitive position and increase efficiency by becoming a digital company or transforming into one. Digital transformation does not necessarily change the organization's product offering but allows the organizations to fundamentally change the way they operate and deliver value to their customers (Savić, 2019). It could also introduce new business opportunities for the organizations by pursuing new revenue streams through new products or services or creating a core transformation in the organization's current business model (Anthony et al., 2017).

Digital transformation is a gradual process of leveraging digital technologies to improve efficiency and performance in an organization, resulting in changes in work processes, organizational culture, and sometimes organizational structure (Savić, 2019; Bannikov et al., 2022). According to Bannikov et al., 2022, it is only possible to successfully transform with competent and experienced management, in particular project management, effective strategies, organization of the project, motivated personnel, and enhancement of the organizational culture (Bannikov et al., 2022).

Digital transformation leads to several changes in managerial practices, which can impact the organization's sustainability (Agafonova et al., 2022). In order to address economic and environmental sustainability challenges, it is essential to transform existing businesses, which can be achieved through digital transformation, as both concepts require radical changes at the business model level (Diaz & Montalvo, 2022). Moreover, Pinzaru et al. (2022) highlights that sustainable leadership is critical for ensuring organizational resilience and continuous development while recognizing the importance of understanding the relationship between digital transformation and sustainability to keep pace with the increasingly digitalized world (Pinzaru et al., 2022).

1.1.3 Sustainability

The World Commission on Environment and Development (WCED) has defined sustainable development in the Brundtland report "Our common future" as "development that meets the needs of the present, without compromising the ability of future generations to meet their own needs" (WCED, 1987).

Organizations have started to choose sustainable business as their strategic direction, which can benefit them by creating value, improving performance, increasing efficiency, flexibility, and much more (Toljaga-Nikolić et al., 2020). Sustainability is a tool for organizations to operate in the long term. It will contribute to the sustainable management of natural and human resources, the well-being of society, and the economy as a whole (Martens & Carvalho, 2017). When organizations incorporate sustainable development, it is also called corporate sustainability (CS), and it includes, like sustainable development, three dimensions to consider: economic, ecological, and social (Martens & Carvalho, 2017). The three dimensions are often referred to as the triple bottom line (TBL), also known as "people, planet, and profit" (Toljaga-Nikolić et al., 2020; Silvius, 2017); see Figure 1. The figure explains the three dimensions' relationship and how they all constitute sustainability.

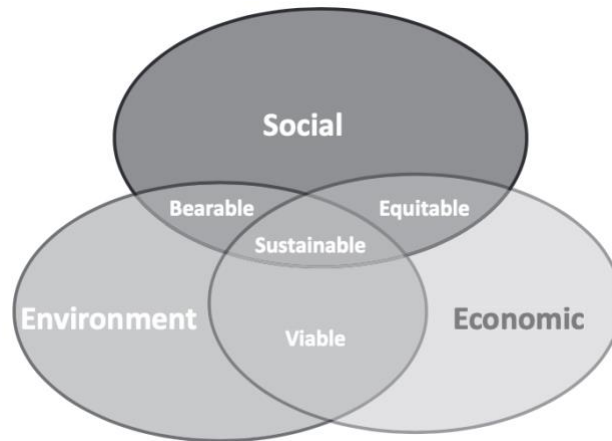


Figure 1: The three dimensions of sustainability and their relations (Silvius, 2012).

Sustainability integrates social, environmental, and economic responsibility to ensure the rational use of present resources and to offer an everyday life for future generations (Martens & Carvalho, 2017). Economic sustainability concerns the company’s growth, development, and productivity. Social sustainability involves the available capacity of non-financial capital. Lastly, environmental sustainability is “the state of stability, resilience, and coherence that permits humans to achieve their demands while not surpassing the ability of their supporting ecosystem to renew the services required to meet those needs, nor reducing biological variety via activities” (Hajishirzi et al., 2022). All three dimensions are included in the Sustainable Development Goals (SDGs) developed by the United Nations (UN), which organizations often include in their sustainability strategy. The SDGs are 17 goals that recognize global crises and work as a global blueprint for organizations and governments to learn how the shared vision can be translated into development plans and strategies (United Nations, n.d)

1.2 Problem Description

Literature recognized a research and knowledge gap regarding the management perspective of the intersection between digitalization/digital transformation and sustainability. This finding is atypical, seeing that there is much literature on the topic of project management within each of the respective fields (Guandalini, 2022). However, literature considering both concepts from a management perspective is more challenging to find. The intersection of these three research areas will become more and more relevant as globalization and digitalization advance. Therefore, looking at practices that project managers could use to successfully implement digital strategies and sustainability into their organization can help guide project managers, strategic leaders, and C-level executives on how to proceed with digital transformation projects to succeed and excel in the ever-changing market.

A recent study found a positive correlation between digital transformation and the SDGs, with the authors emphasizing how management professionals can leverage digital transformation to improve both organization and sustainability performance (Camodeca & Almici, 2021). Further, Pinzaru et al. (2022) acknowledges the value of digital transformation as a means to develop skills necessary for organizations to become more sustainable in a digital world and adapt to new competitive realities. At the same time, Toljaga-Nikolić et al. (2020) underscores the importance of analyzing how organizations can incorporate sustainable practices into projects and how sustainability considerations can affect traditional project management practices.

In recent decades, more research has been done on the intersection between project management and sustainability. However, the studies are often limited to specific industries, such as construction and manufacturing. Silvius (2017) emphasizes the need for more research and studies on sustainability in project management within the information technology industry (Silvius, 2017). As the business practices between the different sectors vary, examining how project managers within the IT sector can use digital technologies and digital transformation to implement sustainability in the organization is relevant. From the growing market within digital technologies, it will be even more relevant than ever to know how project managers should and could benefit from incorporating sustainability both internally in the projects and outside the project boundaries. Project managers can impact the future if they consider sustainability in the planning and implementation of their projects, helping to save world resources and create welfare for society (Toljaga-Nikolić et al., 2020).

The goal is to look at the intersection between project management, digital transformation, and sustainability to find managerial practices to help project managers succeed implementing digital transformation projects, see Figure 2.

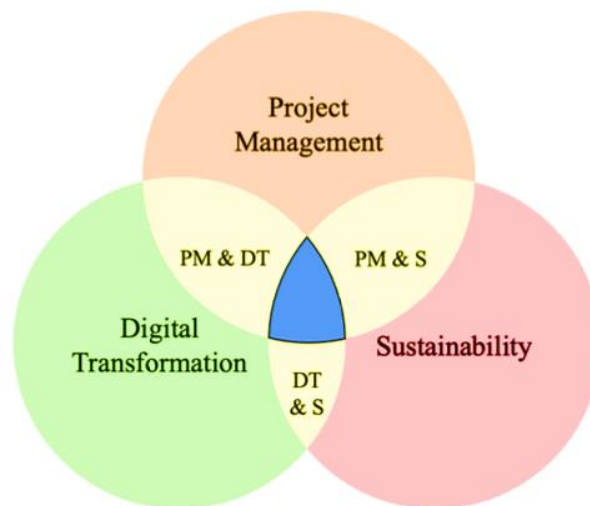


Figure 2: A visual representation of the scope of the master thesis, looking at the intersection between project management, digital transformation, and sustainability.

1.3 Research Question

What managerial practices are important for project managers when implementing digital transformation projects while considering sustainability? (Main RQ)

The main research question for this master thesis focused on the management perspective of digital transformation and sustainability projects. The research question aims to answer what practices can help project managers succeed in these projects. Further, it focuses on what the project manager can do to successfully implement digital transformation projects and incorporate sustainable objectives for their projects and extend them to the organization. As a contribution to answering this question, two more questions are asked to find out more about the project manager's competence and background to see if this affects the project management approach to digital transformation projects and incorporating sustainability into their projects.

What role does sustainability play in digital transformation projects? (RQ1)

As mentioned previously, projects often have an impact outlasting the project timeline in several dimensions. Digital transformation projects are implemented to make a fundamental change in the organization and will have long-lasting effects on the organization's economic, social, and environmental aspects. Economic, social, and environmental dimensions are considered three important pillars of sustainability. It is reasonable to assume that digital transformation must consider sustainability in its process as the goal is to make organizational changes that will create a competitive advantage and ensure long-lasting business.

What personal skills and experience are required when managing digital transformation projects (RQ2)

Digital transformation projects are complex projects involving organizational changes. Therefore, it is crucial to understand what kind of knowledge and experience a project manager of such projects should possess. The observations might contribute to understanding the managerial practices they are emphasize when managing a digital transformation project. Personal or soft skills can also be interesting to look at in this aspect, seeing that people are a massive part of digital transformation.

What role does technical competence play for project managers in digital transformation projects? (RQ3)

This research question is more specific to the competence of the project manager. Implementing technology is an important part of the job in digital transformation projects. To better understand the skills and competence a project manager of digital transformation projects should have, this question aims to understand how technical competence can influence the managerial practices of digital transformation projects.

1.4 Scope of Study

The world is becoming more and more dependent on digital technologies. Organizations must adapt and react to the changing times, and for many older industries, this leads to substantial organizational changes. These traditional industries need help from outside consultants to understand how digital technologies and sustainability can be incorporated and benefit their organization to thrive in the changing market.

In this thesis, the interview objects are currently working as or have previous experience as project managers from the ICT consulting sector. As previously explained, this study aims to find what managerial practices can help project managers succeed in these projects and what competence and experience they should have based on literature and real-world perspective. The sample reflects the goal of this thesis by gathering people with similar experiences with digital transformation but with various backgrounds and project experiences. This sample gives an overview of the challenges of implementing digital transformation projects and incorporating sustainable objectives.

1.4.1 Limitations and Out of Scope

The research for this thesis is done by interviewing consultants working as project managers of digital transformation projects. All literature is generalized and not specified in managerial practices for consultants, meaning assumptions will be made that findings from the literature can be generalized and understood in the consulting context too. In other words, the thesis will be limited to the IT consulting sector. However, each

interview object will use their experience from projects that extends to multiple industries and sectors.

All interviews will be conducted online as the interview objects are dispersed across Norway. This decision allowed for a larger population to choose from and resulted in interview objects from all over Norway. However, the online interviews will not affect nor limit the results of this thesis.

1.5 Structure of Report

The rest of this thesis is organized as follows. Chapter 2 presents theoretical findings about the research fields from the literature review. Further, chapter 3 presents the methodology, where the research design and interview phase will be presented. Chapter 4 will present the findings from the interviews conducted. Chapter 5 will compare the findings from the literature review and the interviews, hopefully resulting in observations that can contribute to these areas of study. Lastly, Chapter 6 will conclude with the findings from Chapter 5 and answer the research questions presented in this chapter. There will also be presented some recommendations for future research.

2 Theory

In this section, the theory from the literature review will be introduced. The chapter will mainly be focused on the interconnection between project management, digital transformation, and sustainability. It will look at the benefits and opportunities for value creation with digital transformation, challenges for project managers in digital transformation and sustainability projects, and some managerial practices to handle digital transformation projects and implement sustainability.

2.1 Projects and Project Management

Changes are often introduced to organizations through projects (Toljaga-Nikolić et al., 2020). As previously stated, projects are often seen as activities that are initialized in an organization to meet business goals that often impact the organization economically, socially, and environmentally (Vrchota et al., 2020; PMI, 2008). Projects are mechanisms for the implementation of an organization's strategy. They can be used in establishing project management and operational sustainability and is vital for the successfully implementing a strategy (Toljaga-Nikolić et al., 2020). They are often divided into several phases depending on the framework, where each phase serves different purposes. In general, the projects are divided into three phases: the front-end phase, the implementation phase, and the operational phase.

Project managers are responsible for the projects, both for successful implementation and reaching the set requirements for the project (PMI, 2008). The iron triangle is often used to measure of project managers' performance, indicating the project's success level (Samset, 2009).

In one of the more famous project management certifications, PProjects IN Controlled Environment 2 (PRINCE2), projects are measured based on three measurements, which is also known as the "iron triangle" or "triple constraints": time, scope, and budget (ILX Marketing Team, 2019). PRINCE2 is often seen as the international standard project management method and is commonly used in the private sector (PRINCE2.COM, n.d.), especially in management within IT consulting. Another certification that is among the common ones in the IT consulting industry is ITIL, which is a collection of best practices in IT service management (ITILTRAINING, n.d.).

Strategy is vital when setting a direction for a project and ensuring its long-term effects and outcome (Klakegg, 2015). Pyka (2017) argues that digital transformation projects enable organizations to incorporate a new digital strategy by utilizing digital technologies, increasing efficiency, optimizing an organization, and contributing to economic and ecological sustainability.

2.2 Terminology in the Literature

According to El Hilali et al. (2020), digital transformation emerged as an alternate way of conducting business. The literature presents an inconsistency in the terminology, making it hard to understand digital transformation and how it affects an organization. More specifically, three terms are interchangeably used about using and implementing technology in businesses: digitization, digitalization, and digital transformation. Savić

(2019) argues that there needs to be more clarity around these terms' meaning, scope, and use. Therefore, he created an overview for each term, divided into five facets: focus, goal, activity, tools, and challenge, see Figure 3. The overview is a good tool to help understand the term digital transformation and lay the foundation for understanding the term in relation to this thesis.




	DIGITIZATION	DIGITILIZATION	DIGITAL TRANSFORMATION
Focus	Data conversion	Information processing	Knowledge leveraging
Goal	Change analog to digital format	Automate existing business operations and processes	Change company's culture, the way it works and thinks
Activity	Convert paper documents, photos, microfilms, LPs, films, and VHS tapes to digital format	Creation of completely digital work processes	Creation of a new digital company or transformation to a digital one
Tools	Computers and conversion/encoding equipment	IT systems and computer applications	Matrix of new (currently disruptive) digital technologies
Challenge	Volume <i>Material</i>	Price <i>Financial</i>	Resistance to change <i>Human resource</i>
Example	Scanning paper-based registration forms 	Completely electronic registration process 	Everything electronic, from registration to content delivery 

Figure 3: An overview of the terms digitization, digitalization, and digital transformation from Savić (2019).

For this paper, the most relevant terms are digitalization and digital transformation, even though the main focus will be digital transformation. However, all terms are commonly referred to in conversations about digital technologies, digital strategy, and transformation, and therefore important to understand and differentiate.

2.2.1 Defining Relevant Terms

As the inconsistency in terminology can create confusion for people working with or around digital transformation, it is necessary to define some of the terms correctly. It is also done to explain the differences and set the scene for the upcoming interviews.

Specifically, two words are used interchangeably with digital transformation: digitalization and Industry 4.0 (I4.0). Digitalization is defined as "the adoption or increase in use of digital or computer technology by an organization, industry, country, etc." (OED Online, 2010). As seen in Figure 3, digitalization focuses on information processing, which is used to automate existing business operations and processes. I4.0 explains the fourth industrial revolution, where using digital technologies is central.

Looking through the literature, these two phenomena have many different definitions and descriptions of. The descriptions and definitions are added in Table 1 to illustrate the differences in perception of the terms. However, it is important to note that many definitions and description contains the same keywords and concepts; see bolded words.

Table 1: Definition of terms relevant to digital transformation (own production).

Article	Term	Definition
Frank et al. (2019) in (Zhang et al., 2022), p.1	Industry 4.0	"Industry 4.0 is considered as a new industrial scenario that combines various high technologies through internet of things (IoT) technologies, culminating in an integrated platform that can serve both businesses and consumers , in order to achieve sustainable development ."
Vrchota et al. (2020)	Industry 4.0	"Industry 4.0 as a revolutionary industrial concept of the production process in manufacturing, focused on new technologies that interconnect machines and equipment with digital data into automatic , intelligent systems."
Fritzsche et al. (2018) in Agafonova et al. (2022)	Industry 4.0	"Industry 4.0 is a revolution based on digital or virtual processes in which manufacturing systems and to-be-manufactured products are linked (or interconnected)."
Diaz & Montalvo (2022)	Digitalization	"Digitalization describes how digital technologies can be used to alter existing business processes."
Gartner (2021) in Guandalini, 2022	Digitalization	"Digitalization is the use of digital technologies to provide new value-producing opportunities as well as the process of moving to a digital business ."
Brennen and Kreiss (2016)	Digitalization	"Digitalization refers to the adoption or increased use of digital technologies , as for instance cloud or mobile computing, artificial intelligence or 3D-printing by governments, industries, or organizations."
Clerck (2017) in El Hilali et al. (2020)	Digitalization	"Digitalization is the use of digital technologies and of data (digitized and natively digital) in order to create revenue , improve business , not simply digitizing them, but to transform business processes (not simply digitizing them) and create an environment for digital business, whereby digital information is at the core."

I4.0 indicates the fourth industrial revolution, while digital transformation is the use of digital technologies in business and society, leading up to the term Industry 5.0 (I5.0). I5.0 addresses innovation to drive the transition to a more sustainable and human-centered industry (Costa et al., 2022).

2.2.2 Defining Digital Transformation

As presented in Figure 3, digital transformation is about leveraging an organization's knowledge to change the organizational culture and create new ways of working and thinking by using disruptive digital technologies (Savić, 2019). The literature review revealed many definitions in the terminology around digitalization and I4.0, and the same was found for digital transformation. Some of the literature agrees on most aspects of the definition of digital transformation, while others deviate further from others. Table 2 is a summary of all definitions found in the literature. Keywords have been bolded out in an attempt to find similarities and differences.

Table 2: Different definitions of digital transformation from various articles from the literature review (own production).

Article	Term	Definition
Hanelt et al. (2020) in Guandalini, 2022	Digital transformation	"Digital transformation is the organizational change that is triggered and shaped by the widespread diffusion of digital technologies ."
Hanelt et al. (2020) in Guandalini (2022)	Digital transformation	Digital transformation is the organizational change that is triggered and shaped by the widespread diffusion of digital technologies .
Hartl et al. (2017) in Šimberová et al. (2022)	Digital transformation	"Digital transformation is a departure from previous IT-enabled business transformation in its holistic nature and speed."
Gökalp and Matinez (2021) in Šimberová et al. (2022)	Digital transformation	"Digital transformation is a disruptive technological achievement that brings new business and operating models to all sectors ."
Camodeca & Almici, 2021	Digital transformation	"Digital transformation is a transition from the analogue to the digital age, leading firms to general improvement by managing change in a successful manner using digital technologies ."
Wiles (2019) in El Hilali et al. (2020)	Digital transformation	"Digital transformation is reinventing business by creating new revenue streams in new ways."
Westermann et al. (2011) in El Hilali et al. (2020) Capgemini in El Hilali et al. (2020)	Digital transformation	"Digital transformation is the use of technology to radically improve performance or reach of enterprises."
Westermann et al. (2011) in Kozarkiewicz (2020)	Digital transformation	Digital transformation is the use of digital technologies to radically improve the performance or scope of an enterprise.
Thomas et al (2016) in El Hilali et al. (2020)	Digital transformation	"Digital transformation is concerned with changes that digital technologies can bring about in a company's business model , products, processes , and organizational structure ."
Hamidi et al. (2018) in Gomez-Trujillo & Gonzalez-Perez (2021)	Digital transformation	Digital transformation is the most profound and accelerating transformation for business activities , processes , competencies, and models to leverage the change of digital technology and their impact in a strategic and prioritized way.
Bannikov et al. (2022)	Digital transformation	"Digital transformation is transformation with respect to the changes that modern digital technologies bring to companies' business models , products and organizational structures ."
Agafonova et al. (2022)	Digital transformation	"Digital transformation is the conception to re-engineer businesses as a mechanism to capture information technologies ' potential, as a profound transformation of organizational activities or using digital advances ."
Morakanyane et al. (2017) in Kozarkiewicz (2020)	Digital transformation	Digital transformation is an evolutionary process in which organizations respond to changes in the environment by using digital technologies to improve business models , operational processes , and to create value for customers.
Gruman (2016) in Durão et al. (2019)	Digital transformation	Digital transformation is the application of digital technologies to fundamentally impact all aspects of business and society .
Vial (2019) in Eisner et al. (2022)	Digital transformation	Digital transformation is a more comprehensive term for the changes in the industry and society and is not limited to organization-centric processes.
Vial (2019) in Lang & Müller (2021)	Digital transformation	Digital transformation is a process that aims to improve an entity by triggering significant changes to its properties through combinations of information , computing , communication , and connectivity technologies .

It is clear from Table 2 that literature has different interpretations of the term digital transformation. Most definitions include digital technologies and change/transformation as keywords. However, the interesting part is to look at the difference in understanding what the purpose of digital transformation is. From the definitions, digital transformation is changing business models, products, organizational processes, and structures. It

improves performance and scope for organizations and is used as a tool to reinvent businesses and create new business opportunities. Some definitions extend digital transformation to a broader perspective, focusing on how it affects industries and society.

2.3 Digital Transformation as a Tool to Become More Competitive

Digital transformation presents immense potential and possibilities; therefore, it can take time to visualize and understand how it can be used and its benefits. Bannikov et al. (2022) argue that it can hinder business development because it is a complex and extensive project. However, in most literature, digital transformation is seen as an enabler of business. Implementing new digital business models and adapting sustainable principles is necessary to remain competitive in the ever-changing global market (Pinzaru et al., 2022).

According to Pinzaru et al. (2022), digital transformation contributes to organizational results by meeting customer expectations. It helps organizations become more customer-centric, remain competitive, and exploit new opportunities due to the implementation of new digital technologies (Diaz & Montalvo, 2022; El Hilali et al., 2020; Gomez-Trujillo & Gonzalez-Perez, 2021; Bannikov et al., 2022). Costa et al. (2022) argue that customers often initiate digital transformation or orient them around them to meet their needs through innovation and redesign of current offerings to add value to all stakeholders. Furthermore, digital technologies decrease the distance between the organization and the customer by improving communications channels (Diaz & Montalvo, 2022). Therefore, it allows for better stakeholder engagement resulting in a better competitive position (Pinzaru et al., 2022). Additionally, the data gathered from digital technologies can help customize the organization's customer communication (Hajishirzi et al., 2022).

El Hilali et al. (2020) introduces digital transformation as an opportunity for the organization to blur boundaries and break barriers to create and capture new value in adjacent markets. Digital technologies can, by moving the organization to a digital business, provide new value-producing opportunities (Guandalini, 2022; Camodeca & Almici, 2021; Bannikov et al., 2022). According to Costa et al. (2022), digital transformation permeates different business areas to pursue new value creation. By reinventing the business model, digital transformation creates new revenue streams and enables organizations to capture value in the digital age (El Hilali et al., 2020).

Change creates an opportunity to incorporate sustainability aspects into the business model adopted by the organization (Costa et al., 2022). Adopting digital tools and incorporating sustainability reduce cost, increase efficient risk management, help organizations adapt to customer expectations, stimulate innovations, and improve organizational reputation (Bannikov et al., 2022). Digital transformation is not only seen as incorporating digital technologies but as an extensive transformation that will ultimately change lives for the better and as a predecessor of sustainability (Diaz & Montalvo, 2022). The digital revolution will force companies to enhance their digital capabilities to balance their economic, environmental, and social impacts (Diaz & Montalvo, 2022; Camodeca & Almici, 2021; Gomez-Trujillo & Gonzalez-Perez, 2021).

An important part of digital transformation is to define and develop an organizational culture where governance and talent are cultivated to increase the flexibility necessary to

grow (Diaz & Montalvo, 2022). Transforming the traditional business to a digital one allows the organization to become more flexible in experimenting with its offerings and adapting to customer feedback (El Hilali et al., 2020; Gomez-Trujillo & Gonzalez-Perez, 2021).

Lastly, digital transformation can help mitigate the disadvantages of knowledge flow barriers, signifying that information can be easier to traverse in an organization (Zhang et al., 2022). Digital technologies allow for a new level of data gathering (Hajishirzi et al., 2022). The data gathering can provide helpful insights into the organization, its business, and its customers (Hajishirzi et al., 2022; El Hilali et al., 2020) and help the organization make decisions and changes faster depending on the feedback received (El Hilali et al., 2020).

2.4 Digital Transformation from a Project Manager's Perspective

Change in organizational strategy, structures, and processes is a natural part of establishing digital transformation (Šimberová et al., 2022; Gomez-Trujillo & Gonzalez-Perez, 2021). It is blurring the traditional business boundaries, increasing the need for new competence to keep up with the technological incorporation (Zhang et al., 2022). Digital transformation will cause changes in and between organizations, affecting governance, strategy, people, leadership, culture, and technology on different levels (Gomez-Trujillo & Gonzalez-Perez, 2021). However, constant change is vital in improving business models to keep up with competitors and gain a competitive advantage in a dynamic environment (Šimberová et al., 2022). About 70% of digital transformation initiatives fail as a result of an organization not being ready for change without achieving any of the set goals (Costa et al., 2022). Therefore, clarifying some managerial practices that the literature suggests in managing a digital transformation project is important.

Gomez-Trujillo & Gonzalez-Perez (2021) highlights overcoming financial limits as one of the challenges related to digital transformation from a managerial perspective. A considerable amount of financial resources should be devoted to protecting networks, systems, and data when introducing new digital technologies (Šimberová et al., 2022). Additionally, digital transformation often involves new business value propositions that require real commitment from the organization (Gomez-Trujillo & Gonzalez-Perez, 2021). Financial means are a constraint on the ability of organizations to invest in digital transformation, more so for small and medium enterprises (SMEs) than larger organizations (El Hilali et al., 2020).

2.4.1 Managing a Digital Transformation Project

Digital transformation, and the path from I4.0 to I5.0, allow organizations to move their focus from shareholder to stakeholder value in the transition to a more human-centered industry (Costa et al., 2022). The digital transformation era causes new uncertain environments and can contribute to resistance from social groups. Therefore, the project manager must prepare the organization and stakeholders for the changing organizational culture and the adoption of new sustainable practices (Agafonova et al., 2022).

Stakeholder Management and Communication

Stakeholder involvement can help project managers enhance digital transformation's positive impact of by providing a clear understanding of all relevant stakeholders' specific implications and concerns (Camodeca & Almici, 2021). To fully realize the advantages of

digital transformation, the project manager should involve the stakeholders in planning, measuring, and tracking relevant benefits (Badewi, 2022).

Lang & Müller (2021) mentioned the importance of understanding which stakeholders are relevant and important in each project phase and how you should involve them in decision-making in transformation projects. Additionally, because the digital transformation will demand change in work processes, involving different stakeholders might help limit or eliminate the resistance to change (Gomez-Trujillo & Gonzalez-Perez, 2021). It can also be a good opportunity to use the knowledge of the stakeholders in digital technology and strategy implementation (Barbosa & Saisse, 2019).

Poor communication is highlighted as one of the key issues with change failures (Pacolli, 2022). However, the digital technology ensures efficient communication in organizations (Barbosa & Saisse, 2019). Project manager can use digital technologies to share knowledge between stakeholders and satisfy the customer needs.

Project Planning

The organization needs a strategic vision and an effective and realistic implementation plan for digital transformation projects (Bannikov et al., 2022). These multi-dimensional projects often affect the organization strategically, operationally, and organizationally (Carujo et al., 2022; Kozarkiewicz, 2020), making planning crucial. According to Whelan-Berry & Somerville (2010), change projects often fail because of a lack of planning. Adopting digital technologies through digital transformation should be well planned in different stages of the process to meet the proposals set by the organization (Costa et al., 2022).

Proper planning is key to success (Badewi, 2022). However, without a set direction, success is meaningless (Lang & Muller, 2021). The project manager must steer the project toward business objectives that correspond to the digital strategy and new business model of the organization ((Badewi, 2022; Correani et al., 2020). Also, seeing that there often are short deadlines associated with digital transformation, project managers can utilize evolving target states instead of fixed goals (Pacolli, 2022).

There is also a need to look at the people affected by digital transformation when talking about planning. In addition to an implementation plan, there should be a plan to introduce organizational changes. Herrero et al. (2020) suggest implementing change management practices for the project manager to handle the transformation.

Change Management Practices

Camodeca & Almici (2021) included "managing change in a successful manner using digital technologies" into their definition of digital transformation, implying the significance of change management in these projects. The project manager should familiarize themselves with the current situation (as-is) and use it as a starting point when planning and defining the future state (to-be) (Carujo et al., 2022)

Change management practices are a huge part of most literature about digital transformation and project management (Jørgensen, 2022). Project managers should be familiar with change management and actively implement it to make it feel less complicated and to encourage change for the employees. Change management aims to help stakeholders understand and take ownership of the new technologies. Pacolli (2022) acknowledges the importance of approaching change management holistically to comprise all aspects and dimensions of change.

Viability Analysis

The economic aspect of digital transformation in starting phases is not paid much attention to in the literature (Jørgensen, 2022). The viability analysis is an effective tool when investing and should be performed for an organization when planning digital transformation initiatives. It calculates the economic value creation for stakeholders (Carujo et al., 2022).

Innovation

Innovation can be a strategy for organizations to achieve their business objectives and keep their competitive position in the market (Lavalle & Casale, 2020). The external pressure to change to customer expectations force project managers to cultivate innovation (Šimberová et al., 2022). Project managers should leverage innovation to refocus the attention on their stakeholder relationships and customer engagement to create value (Pinzaru et al., 2022), seeing that innovation is closely bounded to customer satisfaction (Šimberová et al., 2022). Digital technologies enable rapid innovation for organizations, which can strategically position the organization in relation to the competitive market (Hajishirzi et al., 2022; Pinzaru et al., 2022). Project managers should encourage stakeholders to be creative and innovative to handle the upcoming challenges in the dynamic environment (Altukhova et al., 2018).

Educate and Train Employees

It is necessary to adapt the employees to new digital technologies, cultivating a need for new competencies among them (Altukhova et al., 2018). Digital technologies can hurt the organization by limiting its competitive advantages if the employees lack the competence to leverage digital technologies. Both Bannikov et al. (2022) and Herrero et al. (2020) highlight "tech-savvy" people as necessary in digital transformation to sustain the changes in ways of working using digital technologies. Therefore, the authors consider training employees and giving them relevant education vital in the change management strategy to successfully implement digital transformation (Herrero et al., 2020).

Change in Organizational Culture

It is important that the project manager recognizes that digital transformation will cause significant changes in the organization and that it will disrupt traditional views of the business and organization (Zhang et al., 2022). Digital transformation will promote new forms of collaboration, exchange, consumption, and production for organizations. Therefore, hand in hand with sustainability, it can be seen as an accelerator of cultural change (Gomez-Trujillo & Gonzalez-Perez, 2021). As a project manager, it is important to change the organizational culture to become more resilient to the dynamic environment and agile in how the organization approaches change (Hajishirzi et al., 2022).

Agile Project Management

The agile project management approach is becoming increasingly popular in different industries and is not only used for IT and software projects (Kozarkiewicz, 2020). Project managers can benefit from using the agile approach in digital transformation projects because of their ability to adapt to change and seize new opportunities rapidly (Correani et al., 2020). It can be used to improve both coordination and internal and external communication between stakeholders. At the same time, it allows for flexibility in the

planning and execution process (Barbosa & Saisse, 2019), creating short-term detailed plans and tentative long-term plans (Laufer et al., 2015).

2.4.2 What Does Digital Transformation Expect From a Project Manager

When handling and managing complex projects such as digital transformation, the project manager must have relevant knowledge and skills. They should also familiarize themselves with the required methods and techniques the project needs to plan, budget, and analyze for success. Further, the project manager should handle the stakeholders to achieve maximum efficiency during the project life cycle. There are several key attributes the project manager of a digital transformation should have. Literature also suggests that hard skills, meaning technical skills in this context, are important in digital transformation projects (Bannikov et al., 2022).

Most of the key attributes for project managers' literature mentions are soft skills, where soft skills refer to qualities that are not directly connected to the profession. One important skill is building relationships between the stakeholders and confident communication. These abilities are essential for understanding customer requirements and needs and setting goals early in the project (Bannikov et al., 2022).

Technical skills are also important when managing digital transformation. Bannikov et al. (2022) imply that effective management of digital transformation should be done by specialists with the appropriate qualifications and relevant skills (Bannikov et al., 2022). Therefore, hiring and educating skilled people is important to help with digital technology transformation (Zhang et al., 2022).

Lastly, the project manager should know the latest legislative changes and government policy trends and understand their business's legal aspects. Government support can be leveraged if project managers are aware of the latest trends in politics and economics during a digital transformation of a business (Bannikov et al., 2022).

2.4.3 Management Styles for Digital Transformation

According to Toljaga-Nikolić et al. (2020), traditional project management concepts are solely interested in profit without considering their projects' the social and environmental impacts. The traditional project management approach needs more flexibility and openness to change on the project level, as the approach supports a set sequence of project stages, process orientation, clarity of requirements and results, and minimal space for changes during a project's lifetime. Agile project management was created as an alternative to traditional project management (Toljaga-Nikolić et al., 2020).

Traditional Project Management

The traditional approach, also known as the waterfall method, to project management is no longer sufficient to handle corporate processes' complex and turbulent environment (Vrchota et al., 2020). The method is explained as processes following each other, similar to a waterfall. The traditional approach develops short- and long-term plans early in the project, often when the project manager has the least access to reliable information. It is a great method for projects with specific and defined end goals and often relies on stability for project success (Laufer et al., 2015).

In traditional project management methods, change was considered an extra cost and should be avoided (Gomes et al., 2022). In today's competitive market, organizations must change to meet the expectations of their dynamic environment (Gareis, 2010),

which force organizations to be flexible and adaptable to change. Laufer et al. (2015) argue that project managers often combine traditional management practices with an agile approach to remain flexible in digital transformation projects.

Agile Project Management

As a result of the changing requirements, organizations are forced into more agile methodologies to preserve their competitive position. Agile project management came as an answer to the customers' changing needs and requirements, whereas companies can react and adapt accordingly (Gomes et al., 2022). Contradictorily to traditional project management, the agile method allows management to shift their priorities by creating detailed short-term and tentative long-term plans (Laufer et al., 2015).

Agility should include both flexibility and leanness, where flexibility relates to "the ability of a system's development method to create change, or proactively, reactively, or inherently embrace change in a timely manner, through its internal components and its relationships with its environment" (Conboy (2009) in Gomes et al., 2022). The agile approach takes advantage of the change to improve the organization's competitive position (Dingsoyer et al., 2019).

2.5 Sustainability in Projects

Sustainability has become one of the main drivers of digital transformation. Climate challenges, such as pollution and scarce resources, put organizations under high pressure to implement sustainability into their business (Pinzaru et al., 2022; Feroz et al., 2021). Project and project management are recognized as "a way to sustainability" (Silvius, 2017). This subchapter will introduce the term and how to manage sustainability from relevant literature.

The definition of *sustainability* from WCED (1987) is the most frequently used in the literature review, "sustainability is meeting the needs of the present without compromising the ability of future generations to meet their own needs." WCED's definition continues by stating that "in essence, sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance current and future potential to meet human needs and aspirations" (WCED (1987) in Silvius, 2017).

Some literature argues that the broad definition from WCED is not sufficient when applied to the corporate perspective as it provides little guidance to how current needs should be identified in relation to the future. Additionally, there needs to be more guidance on which technologies and resources meet the needs and more understanding of how to balance the organizational responsibilities effectively (Martens & Carvalho, 2017).

As with digital transformation, other terms are used in relation to sustainability and corporate sustainability. An overview of the terms and their definition is given in Table 3.

Table 3: Definition of key terms related to sustainability from various resources (own production).

Article	Term	Definition
WCED (1987) in Diaz & Montalvo (2022); Hajishirzi et al., 2022, Camodeca & Almici, 2021; El Hilali et al., 2020	Sustainability	Sustainability is meeting the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987).
Gladwin et al. (1995) in Martens & Carvalho, 2017	Sustainability	Sustainability is a process that creates a vision of community that respects the prudent use of the natural resources to ensure that the present generations achieve a high degree of economic security and can attain democracy and popular participation in the control of their communities while maintaining the integrity of the ecological systems and of life.
WCED (1987) in Vrchota et al. (2020); Silvius, 2017; Martens & Carvalho, 2017	Sustainable development	Sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs.
Silvius et al. (2012)	Sustainability in projects and project management	"Sustainability in projects and project management is the development, delivery, and management of project-organized change in policies, processes, resources, assets or organizations, with consideration of the six principles of sustainability, in the project, its results and its effect.
Toljaga-Nikolić et al., 2020	Sustainable project management	"Sustainable project management is the planning, monitoring, and controlling of project delivery and support processes, considering the environmental, economic, and social aspects of the life cycle of a project's resources, processes, deliverables, and effects, with the aim of creating benefits for stakeholders in a transparent, fair, and ethical way that includes proactive stakeholder participation."

The term "triple bottom line" (TBL), introduced earlier, is said to be the tripod of sustainability, including the economic, social, and environmental dimensions of sustainability (Gomes et al., 2022). The dimensions are often talked about in close relation to sustainability.

Economic Sustainability

Economic sustainability is related to a company's profit and positive economic-financial results (Gomes et al., 2022). In other words, the economic sustainability dimension is represented by the profitability and liquidity of the organization (Costa et al., 2022), considering the economic effects and benefits of sustainability (Toljaga-Nikolić et al., 2020).

Managerial practices that can help organizations improve economic sustainability (Gomes et al., 2022):

- analyze and manage stakeholders;
- engage and encourage innovation to improve productivity;
- managing relationships with the customers;
- understand and constantly evolve the whole value chain.

Social Sustainability

Social sustainability involves the human capital development and focuses on improving people's quality of life and developing better policies in areas such as education, leisure,

and security (Gomes et al., 2022), signifying that the social dimension is represented by respecting the human capital and society when conducting the organizations' business (Costa et al., 2022). The dimension is related to tackling inequalities and ensuring the inclusion and accessibility of services. Gomes et al. (2022) argue that sustainable development and integration of social responsibility must be incorporated into the business strategy as a strategic investment to realize the benefits they add properly. To positively impact society, organizations should start by identifying customers' social needs (El Hilali et al., 2020).

Managerial practices that can help organizations improve social sustainability (Gomes et al., 2022):

- involve more people when making decisions;
- include learning to encourage people to be creative, open-minded, and explore and try new work methodologies and activities;
- allow self-organization to give people the opportunity to influence the process around them;
- build trust so people can stay together despite increased complexity and changing requirements around them;
- encourage communication to find the best solutions by collaborating and contributing to a better workplace atmosphere.

Environmental Sustainability

Many people associate the term sustainability with the environment and climate change. The environmental dimension includes environmental preservation, natural resource conservation, and reduction of environmental damage over time (Gomes et al., 2022).

Managerial practices that can help organizations improve environmental sustainability (Gomes et al., 2022):

- encourage creativity to solve problems and find new ways to utilize resources fully;
- recognize the laws and regulations related to sustainability;
- educate the employees to align them with the sustainable parts of the business strategy.

2.5.1 Incorporating Sustainability as a Project Manager

The project managers' role in sustainable project management expands beyond the project because they get the opportunity to influence many aspects of the project, including the deliverables and objectives of the project (Silviu, 2017). For sustainable project management, managers need a link between the project and the organization's strategy to properly guide the strategy and managers toward the right decisions regarding the projects, organization, and society as a whole (Toljaga-Nikolić et al., 2020). Business strategy and management support are important when using digital tools to support business sustainability (Pinzaru et al., 2022).

WCED made a connection between sustainability and projects back in 1987. However, the nature of projects, as temporary organizations and project management, is not designed to address sustainability (Silviu, 2012). There are several differences in characteristics between sustainability and project management; see Table 4.

Table 4: An overview of the differences between sustainable development and project management from Silvius et al. (2012).

Sustainable Development	Project Management
Long-term + short-term oriented	Short-term oriented
In the interest of this generation and future generations	In the interest of sponsor/stakeholders
Life cycle oriented	Deliverable/result oriented
People, planet, profit	Scope, time, budget
Increasing complexity	Reduced complexity

In recent years, some of the project management standards explicitly refer to sustainability as a perspective that should be considered in the management and governance of projects (Silvius, 2017). Findings from Toljaga-Nikolić et al. (2020) indicate that project managers who want to succeed in implementing sustainability must focus on the resources in the project and utilize “green” technologies and “green” solutions to contribute to sustainability. Furthermore, the project manager must properly communicate the quality of the project result to the stakeholders (Toljaga-Nikolić et al., 2020).

2.5.2 Sustainable Project Management

Sustainable project management contributes to value creation, business agility, operational project excellence, and long-term sustainable business in different sectors (Toljaga-Nikolić et al., 2020). From Vrchota et al. (2020), sustainable project management is seen as a contribution to the TBL’s dimension in the project life cycle, stakeholders’ demands, and the organization’s social sustainability. Further, the project management approach is changing their critical success factors from the traditional ones, time, budget, and quality, to more future-oriented ones, where the focus is long-term priorities in social, environmental, and economic (Vrchota et al., 2020).

The sustainable project management approach makes the list of stakeholders more comprehensive, which adds complexity to the project manager’s responsibility (Toljaga-Nikolić et al., 2020). The traditional project stakeholder analysis is often project-centric, resulting in less suitable management for the stakeholder approach (Silvius, 2017). A holistic view of project stakeholder management is necessary when combining project management and sustainable development. More specifically, the author states that “... it calls for different values. Values like transparency and fairness constitute management for stakeholder approach (Huemann et al. (2016) in Silvius, 2017). Organizations have shifted their priorities, commitments, and activities towards more sustainable practices as a result of growing globalization and more business transparency (Elkington, 2004).

2.5.3 Benefit Realization through Sustainability

Studies have shown a positive correlation between digital business strategy, sustainability strategy, and the financial performance of companies (Agafonova et al., 2022). The sustainability strategies are merged into the business strategy to further emphasize the mission to survive and achieve a competitive advantage (Toljaga-Nikolić et al., 2020). Hajishirzi et al. (2022) found that competitive advantage affects economic sustainability more than on social and environmental sustainability.

Studies have found a positive correlation between sustainability, a company’s success, and corporate reputation (Gomes et al., 2022). However, organizations need to engage

in corporate sustainable, responsible activities to improve their social reputation (Martens & Carvalho, 2017). Organizations can use the sustainability trend to communicate their activities and achievements within sustainability and take advantage of the corporate reputation that sustainability entails (Diaz & Montalvo, 2022). The introduction of sustainability concepts allows organizations to take responsibility for their activities impact on their clients, employees, management, community, surroundings, and the environment itself (Toljaga-Nikolić et al., 2020).

Customer engagement has more effect on social sustainability than environmental sustainability. A study from Hajishirzi et al. (2022) revealed that customers play a significant role in gaining valuable capabilities and competitive advantages. Therefore, organizations should engage, attract, inspire, and collaborate with their customers in all aspects of their business (Hajishirzi et al., 2022).

2.5.4 Managing Sustainability in Projects

There has to be an economic, social, and cultural change to implement sustainability successfully in organizations (Pyka, 2017). Project managers have an extended responsibility to communicate and collaborate with stakeholders to perform better on sustainable objectives (Jørgensen, 2022)

Understanding the Project Manager Role in Sustainability

Silvius (2012) did a deep dive into the different project roles in relation to sustainability, see Figure 4. He found that the project manager can influence or is responsible for all aspects of sustainability in their projects. The central role gives the project manager a unique opportunity to influence many aspects of the projects, such as sustainability aspects, concerns or issues (Silvius, 2017; Silvius, 2012).

Successfully implementing of sustainable objectives depend on the sustainability competence of the project manager. If the project manager does not have this type of competence, the organization often chooses to hire consultants with the relevant knowledge and skills (Wang et al., 2014). Silvius & Marnewick (2022) mention knowledge as a critical success factor in sustainability and project management, including expertise about the social and environmental impact of the organization's strategy.

		Project context				Project team			Operations
		Project sponsor	Portfolio manager	Program Manager	Senior user or Senior supplier	Project manager	Designer/ architect	Construction/ realisation manager	Project user
Economic Sustainability	Return on Investment	is responsible for	can influence	can influence	can influence	can influence	can influence	can influence	can influence
	Business Agility	can influence	can influence	can influence	can influence	is responsible for	is responsible for	can influence	
Environmental Sustainability	Transport	responsible or can influence	can influence	can influence	can influence	responsible or can influence	can influence		
	Energy	responsible or can influence	can influence	can influence	can influence	responsible or can influence	responsible or can influence	can influence	can influence
	Waste	can influence			can influence	responsible or can influence	is responsible for	is responsible for	can influence
	Materials and Resources	responsible or can influence			can influence	responsible or can influence	is responsible for	is responsible for	can influence
Social Sustainability	Labour Practices and Decent Work	responsible or can influence	can influence	can influence	can influence	is responsible for	can influence	is responsible for	is responsible for
	Human Rights	responsible or can influence	can influence	can influence	can influence	is responsible for	can influence	is responsible for	is responsible for
	Society and Customers	responsible or can influence	can influence	can influence	can influence	is responsible for	can influence	can influence	can influence
	Ethical Behaviour	responsible or can influence	can influence	can influence	can influence	is responsible for	can influence	is responsible for	is responsible for

Figure 4: A mapping of responsibilities in relation to sustainability for different organizational roles (Silvius, 2012).

Aligning Projects to Strategy

To fully benefit from sustainability, it must be integrated into the organization’s business strategy (Gomes et al., 2022). More organizations are adopting corporate responsibility strategies, contributing to analyzing their environmental impact, and working towards the SDGs (Vrchota et al., 2020). Integrating sustainability into projects and project management will impact the specification and requirements in the project’s deliverable or output and change the project’s success criteria (Silvius, 2017). Therefore, it is important that the project manager aligns the sustainable project objectives with the societal objectives (Toljaga-Nikolić et al., 2020).

Whole Life Project Management

Martens & Carvalho (2017) highlights the importance of including environmental sustainability in all project phases. Wang et al. (2014) found that continuous involvement of the project management team throughout the project life cycle was a success factor in reaching sustainable projects objectives. Figure 5 shows how sustainable project management extends the time orientation compared to traditional and modern project management, starting from the resource’s life cycle to the outcome and effects of the project. Modern project management is a more agile method of managing projects than traditional methodology. It also emphasizes the enlarged scope of sustainable project management by including the global society (Silvius et al., 2017).

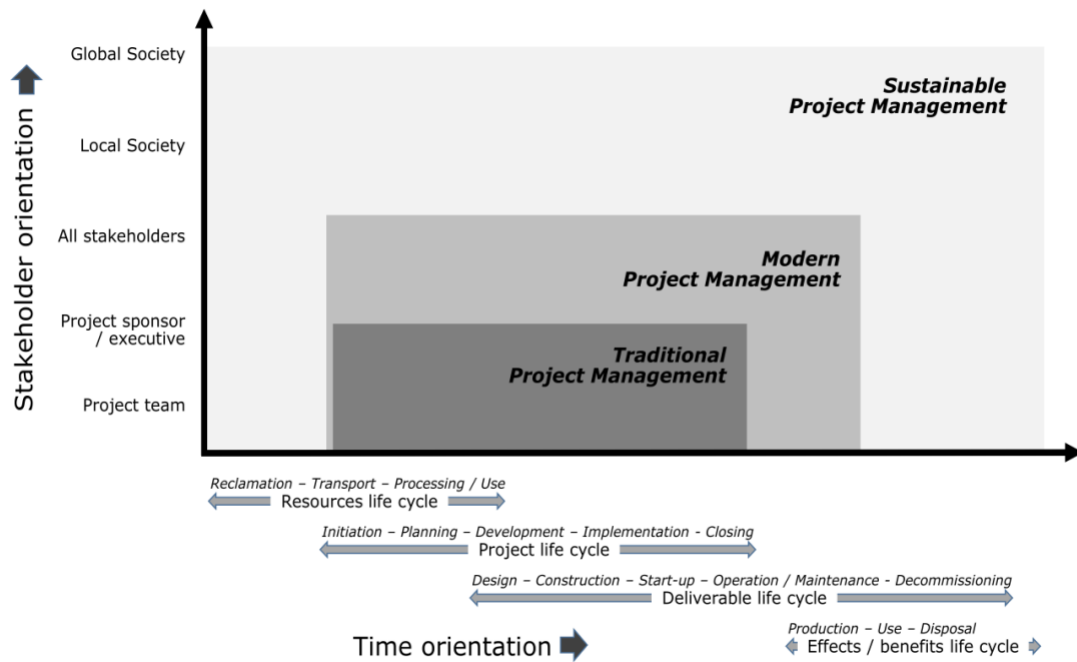


Figure 5: Illustration of the differences between project management approaches, from Silvius et al. (2017) in Silvius, 2017.

Many see sustainability as meeting the needs of an organization’s direct and indirect stakeholders without compromising its ability to meet future stakeholders’ needs (Vrchota et al., 2020; Silvius, 2017). Therefore, sustainability makes project managers use a holistic approach where economic, environmental, and social dimensions influence their perspective (Vrchota et al., 2020).

Change in Organizational Culture

Sustainability and digital transformation go hand in hand as accelerators of cultural change because of the new forms of collaboration, exchange, consumption, and production (Gomez-Trujillo & Gonzalez-Perez, 2021). As sustainability challenges can be seen as opportunities for innovations and new solutions, the social mission of sustainability must be incorporated into the organizational culture (Martens & Carvalho, 2017). A cultural change can enable shared value creation (Martens & Carvalho, 2017). Project success depends on many factors, including the organization and its culture (Vrchota et al., 2020). It is important that the project manager is trusted by their project team to make it easier for them to adjust to the ongoing change.

Project Manager’s Skills

In addition to having the knowledge, skills, and capabilities required for project management, sustainability requires project managers to be ethical, righteous, and fair in managing projects. Some important skills include communication (with stakeholders), decision-making, problem-solving, leadership, and teamwork (Toljaga-Nikolić et al., 2020).

According to Vrchota et al. (2020), developing the project manager’s skills has a positive effect on project success. However, Martínez-Perales et al. (2018) found that the standard certifications for project management (PRINCE2, PMBok Guide, ICB International Competence Baseline 3.0) have a scarce focus on the discipline of

sustainability (Martínez-Perales et al., 2018), implying that project managers must take responsibility for their learning about sustainability.

Garies et al. (2011) suggested a model for sustainable development and project management based on principles from both concepts (Martínez-Perales et al., 2018). From sustainable development, they used principles from a holistic approach, long-term orientation, large spatial and institutional scale, reduction of risk and uncertainty, consideration of values and ethics, and participation. From project management, the model included project objectives, scope and schedule, project resources, income, costs, risk, project organization, culture, personnel, infrastructure, and project contest (Garies et al. (2011) in Martínez-Perales et al., 2018). The model promotes an approach that can help project managers succeed with short- and long-term objectives.

Innovation

A study from Hajishirzi et al. (2022) shows that innovation and technological capabilities impact sustainable competitive advantage. The author describes innovation as “adding value to a company product, service, or process” (Hajishirzi et al., 2022). Other studies have shown that the benefits of sustainability are not limited to environmental and social but also enhance the value of an organization (Martens & Carvalho, 2017). In the development of projects, project managers should encourage innovation as it improves the chances of the project being successful, which also improves economic performance (Gomes et al., 2022).

Stakeholder Management and Communication

The evaluation of sustainability forces stakeholders to rethink their priorities regarding the impact of their project (Martens & Carvalho, 2017), signifying the increased focus on stakeholder involvement to meet their changing demands. A thorough stakeholder analysis is important to distinguish key stakeholders throughout the project life cycle (Wang et al., 2014). Wang et al. (2014) found that project managers achieved better performance on sustainable objectives when communicating continuously and collaborating with relevant stakeholders during the project life cycle.

Project managers must understand the interconnection between sustainability and stakeholder, convincing their stakeholders about the long-term objectives of sustainability despite less short-term return on investment (Gomes et al., 2022). It is necessary for the stakeholders also to adopt sustainable practices and pursue sustainable objectives (Sabini & Alderman, 2021).

Inefficient communication is often a common cause of project failure (Vrchota et al., 2020). Silvius (2017) argues that information flow between the project and stakeholder should not be unidirectional but a dialogue allowing both parties to participate in the project’s development. Following the agile approach, project managers must communicate with all stakeholders and see it as a crucial part of their responsibilities in implementing sustainability (Gomes et al., 2022). Communicating with internal and external stakeholders is important for the project manager to work on long-term objectives while leveraging stakeholders’ knowledge (Wang et al., 2014).

Long-term Objectives

The contradiction between the long-term focus of sustainability and the short-term and temporary nature of projects can be difficult for project managers to handle (Silvius, 2012). It is often seen that sustainability is overlooked in projects because of the need

for short-term benefits for the organization, neglecting the medium- to long-term benefits. Project managers are still measured based on traditional measurements, such as time, scope, and budget. Therefore, some tend to down-prioritize sustainability because it does not benefit their performance indicators (Sabini & Alderman, 2021).

Organizations that want to operate in the long term must act to ensure their contribution to sustainable management of natural and human resources, contributing to the well-being of society and the economy as a whole (Martens & Carvalho, 2017). Long-term impacts and effects are the responsibilities of the project manager when incorporating sustainability into project management. It also changes the competence requirements of the project manager (Toljaga-Nikolić et al., 2020).

Agile Project Management

Gomes et al. (2022) focused their study on how the agile project management approach considers the three dimensions of sustainability. Their findings suggest that an agile project approach can help organizations manage changing demands in the market more quickly and effectively (Gomes et al., 2022). The Agile Manifesto indicates that agile processes promote sustainable development, contributing with close and continuous stakeholder cooperation and achieving sustainable project results (Toljaga-Nikolić et al., 2020).

Gomes et al. (2022) also studied stakeholder involvement as an important part of the agile framework. The agile approach corresponds well with some sustainable project management practices, such as stakeholder involvement, short- and long-term objectives, answering to complexity, and an iterative and flexible planning approach (Zakrzewska et al., 2022).

2.5.5 Implementing Sustainability in Digital Transformation Projects

Digital transformation is the key driver to achieving sustainable development and sustainability (Zhang et al., 2022; Diaz & Montalvo, 2022; Gomez-Trujillo & Gonzalez-Perez, 2021). Digital technologies help organizations achieve sustainable development by reducing costs, improving management efficiency, and improving labor productivity (Zhang et al., 2022). As a result, organizations can endure the digital revolution and meet new markets' expectations by enhancing their digital capabilities and analyzing their economic, environmental, and social impacts (El Hilali et al., 2020; Gomez-Trujillo & Gonzalez-Perez, 2021).

The organizations that utilize lower-cost resources are not the most competitive, but rather the organizations that successfully implement advanced technologies and methods for controlling their resources (Martens & Carvalho, 2017).

Guandalini (2022) and Camodeca & Almici (2021) found that digital transformation can contribute to achieving the SDGs. However, it is only when organizations can manage the trade-off between economic activities, quality of life, and environmental safeguarding according to global responsibility, inclusion, and equal opportunity principles (Camodeca & Almici, 2021). Digital technologies contribute to sustainability because of access to new data sources, improving analytical capacities, and cooperation among digital ecosystems (Guandalini, 2022). Some digitalization processes that can help enable the SDGs (Camodeca & Almici, 2021):

- connection and communication between people;
- monitoring of the world's activities and ecosystems;

- analysis of information and the organization of processes and resources;
- improvement of human capabilities.

According to Guandalini (2022), some studies do see digital opportunities for sustainability as a part of organizations' business strategy in the new era of scientific and technological progress. However, there is a misalignment of terminology in academic research. There is scarce use of terminology such as digital sustainability and digital transformation in sustainability contexts (Guandalini, 2022). Zhang et al. (2022) also acknowledges the gaps in existing research for digital transformation and its contribution to corporate sustainability and expresses the need for continuous research.

2.6 Success Criteria for Project and Project Managers

The topic of project success reappears in much of the literature on digital transformation, sustainability, and project management. The project management literature divides between two concepts when talking about project success: project success factors and project success criteria. Project success factor is described as "elements of a project that can be influenced to increase the likelihood of success," and project success criteria is described as "measures by which we judge the successful outcome of a project" (Martínez-Perales et al., 2018).

From a traditional point of view, "project success" was measured based on time, scope, and budget. However, its measurement varies based on the characteristics of the project, and they do not measure any long-term effects of the project (Vrchota et al., 2020). Therefore, new projects can benefit from implementing other measures, such as impact, relevance, and sustainability (Samset, 2010; Martínez-Perales et al., 2018).

To properly measure digital transformation, Zhang et al. (2022) used nine keywords in their examination of organizations: big data, informatization, intelligence, robotics, IoT, blockchain, automation, digitalization, and cloud computing. However, these numbers are hard to use when checking the impact, relevance, and sustainability of the project.

To measure digital transformation's impact on sustainability in an organization, management should introduce specific key performance indicators (KPIs) that can assess how digital technologies contribute to sustainability performance. However, there are no precise measurements that can be used to measure to which degree digital technologies contribute to sustainability (Costa et al., 2022). Silvius (2017) argues that implementing the TBL perspective into the requirements and success definition will cause challenges in relation to the measurability of the project.

2.7 Summary of Findings from the Literature

The literature review reveals several practices for project managers in relation to digital transformation projects and sustainability projects. In an attempt to summarize all information, Table 5 and Table 6 present all findings from the separate literature.

Table 5: Summary of the managerial practices for digital transformation projects found during the literature review (own production).

Management Practice for Digital Transformation	Author (Year)
Stakeholder Management and Communication	Badewi (2022); Correani et al. (2020); Barbosa & Saisse (2019); Lang & Müller (2021); Camodeca & Almici, 2021; Gomez-Trujillo & Gonzalez-Perez, 2021; Bannikov et al., 2022; Pacolli, 2022; Kozarkiewicz (2020); Lang & Müller (2021)
Project Planning	Carujo et al. (2022); Badewi (2022); Herrero et al. (2020); Kozarkiewicz (2020); Correani et al. (2020); Barbosa & Saisse (2019); Lang & Müller (2021) ; Bannikov et al., 2022; Costa et al. (2022); Pacolli, 2022
Change Management Practices	Carujo et al. (2022), Badewi (2022); Lavallo & Casale (2020); Herrero et al. (2020); Correani et al. (2020); Lang & Müller (2021); Pacolli, 2022
Viability Analysis	Carujo et al. (2022)
Innovation	Lavallo & Casale (2020); Altukhova et al. (2018); Kozarkiewicz (2020); Barbosa & Saisse (2019); Šimberová et al. (2022); Pinzaru et al., 2022; Hajishirzi et al., 2022
Educate and Train Employees	Herrero et al. (2020); Altukhova et al. (2018); Kozarkiewicz, (2020); Lang & Müller (2021)
Change in Organizational Culture	Herrero et al. (2020); Altukhova et al. (2018); Lang & Müller (2021); Zhang et al. (2022); Diaz & Montalvo, 2022; Hajishirzi et al., 2022; Gomez-Trujillo & Gonzalez-Perez, 2021
Agile Project Management	Altukhova et al. (2018); Kozarkiewicz (2020); Correani et al. (2020); Barbosa & Saisse (2019)

Table 5 presents findings from the digital transformation and project management literature. The managerial practices reflect the importance of involving people in transformation projects.

Table 6 presents findings from the literature on sustainability and project management. There are similarities between the practices. However, managerial practices in relation to sustainability are more oriented around the project manager and planning for long term impacts of the project.

Table 6: Summary of the managerial practices for sustainability found in the literature review (own production).

Managerial Practices for Sustainability	Author (Year)
Understanding the Project Manager Role in Sustainability	Silvius, 2017; Silvius (2012)
Aligning Projects with Strategy	Gomes et al. (2022); Vrchota et al., 2020; Toljaga-Nikolić et al., 2020; Silvius, 2017
Whole Life Project Management	Vrchota et al., 2020; Silvius, 2017; Martens & Carvalho, 2017; Wang et al. (2014); Martens & Carvalho (2017); Sabini et al. (2019); Zakrzewska et al. (2022); Silvius et al. (2017)
Change in Organizational Culture	Vrchota et al., 2020; Martens & Carvalho, 2017; Gomez-Trujillo & Gonzalez-Perez, 2021; Sabini & Alderman (2021); Martens & Carvalho (2017); Gomes et al. (2022); Silvius & Marnewick (2022)
Project Manager's Skills	Vrchota et al., 2020; Toljaga-Nikolić et al., 2020; Martínez-Perales et al., 2018;
Innovation	Hajishirzi et al., 2022; Martens & Carvalho, 2017; Sabini & Alderman (2021); Martens & Carvalho (2017); Gomes et al. (2022); Sabini et al. (2019); Zakrzewska et al. (2022)
Stakeholder Management and Communication	Vrchota et al., 2020; Toljaga-Nikolić et al., 2020; Silvius, 2017; Martens & Carvalho, 2017; Wang et al. (2014); Sabini & Alderman (2021); Martens & Carvalho (2017); Gomes et al. (2022); Sabini et al. (2019); Zakrzewska et al. (2022); Silvius et al. (2017); Silvius & Marnewick (2022)
Long-term Objectives	Toljaga-Nikolić et al., 2020; Martens & Carvalho, 2017; Wang et al. (2014); Sabini & Alderman (2021); Sabini et al. (2019); Zakrzewska et al. (2022); Silvius et al. (2017)
Agile Project Management	Toljaga-Nikolić et al., 2020; Gomes et al. (2022); Zakrzewska et al. (2022)

3 Methodology

This chapter will present the research design for this paper. It will present different research methodologies for the literature review and the interviews. Also, the data collection process will be elaborated and explained in greater detail.

3.1 Literature Review

A literature review can be seen as a tool that helps determine whether the topic is worth studying and provides insight into the knowledge gaps within the relevant themes. The literature review is also important as it is a benchmark for comparing the literature with other findings (Creswell, 2009). Green et al. (2006) describe a literature review as a tool to objectively report the current knowledge on a topic based on previously published research.

3.1.1 Different Literature Review Types

Green et al. (2006) divide literature review into three types; narrative, qualitative, and quantitative reviews (meta-analyses).

Narrative overviews are useful educational articles as they collect much information about a topic in one readable format. Therefore, they help present a broad perspective of a topic. One can argue that narrative reviews are more influenced and biased as the researcher often know what they want to write about and are looking for articles that fit their topic, knowingly and unknowingly (Green et al., 2006).

The quantitative method provides an objective measure of reality and creates meaning and new knowledge by quantifying data. The approach usually involves a numeric or statistical approach to research design. The research creates meaning through objectivity uncovered in the collected data (Green et al., 2006). When conducting this type of research, the goal is usually "to establish, confirm, or validate relationships and to develop generalizations that contribute to theory" (Williams, 2007, p.66).

Qualitative research can be described as "an effective model that occurs in a natural setting that enables the researcher to develop a level of detail from being highly involved in the actual experiences (Creswell (2003) in Williams, 2007). The method is seen as holistic and involves describing, explaining, and interpreting collected data (Williams, 2009).

Green et al. (2006) describe three different literature reviews, two of which are categorized as systematic. Snyder (2019) describes three different approaches to literature reviews: systematic, semi-systematic, and integrative method. All three methods can be very effective if used and implemented correctly (Snyder, 2019).

The methods need to be matched to the relevant purpose as each contributes to research differently. In

Table 7, all three approaches are introduced and compared.

Table 7: Characteristics with different approaches to literature reviews (Snyder, 2019).

Approach	Systematic	Semi-systematic	Integrative
Typical purpose	Synthesize and compare evidence	Overview research area and track development over time	Critique and synthesize
Research question	Specific	Broad	Narrow or broad
Search strategy	Systematic	May or may not be systematic	Usually not systematic
Sample characteristics	Quantitative articles	Research articles	Research articles, books, and other published texts
Analysis and evaluation	Quantitative	Qualitative/Quantitative	Qualitative
Examples of contribution	Evidence of effect Inform policy and practice	Themes in literature Historical overview Research agenda Theoretical model	Taxonomy or classification Theoretical model or framework

3.2 Data Collection through Interviews

Depending on the research problem, different research designs can be used to gather information from individuals with experience with the relevant topics. Creswell (2009) divides between three different designs: quantitative, qualitative, and mixed methodology. Studies often include quantitative and qualitative methods in varying degrees depending on the purpose of the research. A summary of the characteristics of each design method is described in Table 8.

Table 8: Differences between quantitative, qualitative, and mixed methods for collecting data (Own production based on Creswell (2009))

Quantitative	Mixed methods	Qualitative
Pre-determined	Both pre-determined and emerging methods	Emerging methods
Instrument based questions	Both open- and closed-ended questions	Open-ended questions
Performance data, attitude data, observational data, and census data	Multiple forms of data drawing on all possibilities	Interview data, observation data, document data, and audio-visual data
Statistical analysis	Statistical and text analysis	Text and image analysis
Statistical interpretation	Across databases interpretation	Themes, patterns interpretation

There qualitative research has three types of data collection methods: in-depth, open-ended interviews, direct observations, and written documents. The interview method allows the researcher to understand the social and psychological processes that have occurred in a particular setting or among people who have had sets of experiences. Additionally, this method allows the respondents to have freedom in determining the type and quantity of information they are willing to share (Walters, 2002). Direct observation allows the researcher to gain insights into the perspectives of people by observing up close. Lastly, written documents are usually written observations of daily activities, which can be especially useful at the beginning of their research as it gives access to background information (Walters, 2002).

3.3 Research design

Research design provides a framework for the collection and analysis of data. An important step is determining which research method to use, which Bryman (2012) describes as “the technique that is used for collecting data.” As a part of conducting research, it is important to do a thorough literature review to understand what is known about the topic, which theories and concepts apply, and if there are any clashes in evidence (Bryman, 2012).

Based on the insights obtained about project management in digital transformation and sustainability projects, there is insufficient literature on managerial practices that can be used to contribute to project success. A literature review was conducted to understand and fill knowledge gaps within these areas. Findings from Chapter 2 lays the theoretical foundation for reviewing and answering the research question.

The theory was compared to information gathered from interviews with people working as or who have been working as project managers in digital transformation projects. All interviews provided experience-based observations and thoughts about project management working with digital transformation and sustainability. The findings from the interviews are presented in Chapter 4. By combining findings from the literature and the interviews, solid results are obtained and can help narrow the knowledge gaps and fulfill the aim of this thesis.

3.4 Data Collection

There was performed a literature review and conducted interviews with project management practitioners. The data collection process is important to describe as it is a backbone for this thesis.

3.4.1 Literature Selection

The literature review is a qualitative semi-systematic review. The literature review is deemed semi-systematic as articles presented along the way, which proved useful and contributed relevant and good information about the topics, also made the cut for the theoretical foundation of this thesis, see Figure 6.

Relevant articles were found and included in the literature selection based on their relevance in accordance with the research topic of this thesis. The first step to finding articles was using keywords to search for peer-reviewed articles in large databases. To ensure that most articles were relevant and to narrow the results, some criteria were set; see the overview below:

- Language: English
- Subject area: All
- Publication period: No limit
- Literature type: Peer-reviewed articles
- Geographical area: No limit

The finished list of articles is presented in Table 9. The list presents search words, author(s), and year the article was published.

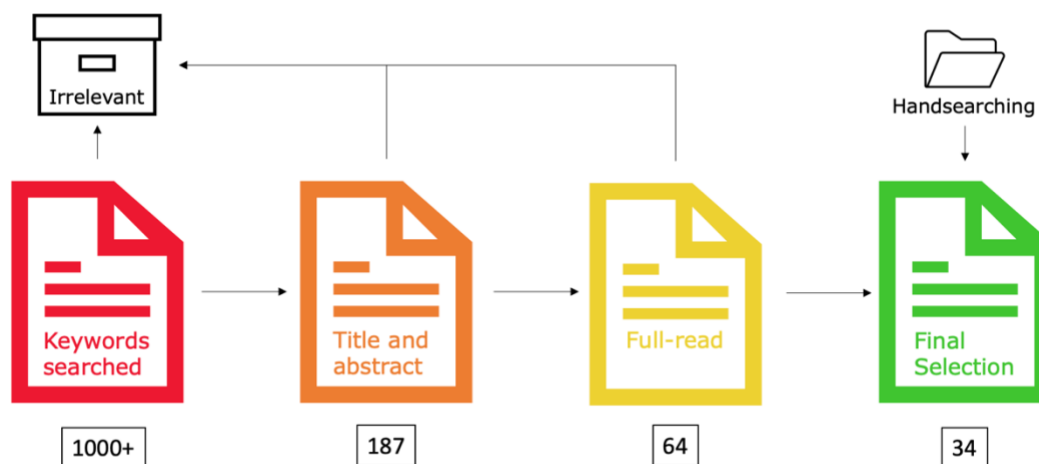


Figure 6: The numbers of articles from the literature review (own production, inspired by Zahid, 2021).

3.4.2 Interviews

The research for this thesis was exploratory, trying to understand individuals' opinions and experience with digital transformation projects and implementing sustainability into projects from a project manager's perspective. Therefore, it was natural to ask open-ended questions, allowing the interview object to explain their thoughts and experience, which is one of the benefits of using a qualitative interview design. Additionally, since the interview sample is relatively small, interviewing with a quantitative design would not give data that could be generalized for a larger population.

Designing the Interviews

To collect a variety of perspectives and concepts, the interview method for this thesis was semi-structured interviews. Semi-structured interviews are used when the researcher can benefit from keeping an open mind to what is being said and the concepts and theories that arise from the interview (Bryman, 2012). When conducting semi-structured interviews, it is critical to be prepared to remain on topic and stay in the research area (Saunders & Lewis, 2012).

The interview process started with designing the interview guide, which had to be approved by the NSD. The interview guide included all questions that could contribute to added knowledge about the real-life experience of the interview objects about the research topics. Patton (1990) presented six types of questions that can be used to ensure richness of response in an interview (Walters, 2002):

1. experience/behavior – questions aimed at finding out what a person does or has done;
2. opinion/value questions – designed to understand the cognitive and interpretive process of the subject;
3. feeling questions – aimed at understanding the emotional responses of people to their experiences and thoughts;
4. knowledge questions – to find out factual information possessed by the respondent;
5. sensory questions – about what is seen, heard, touched, tasted, and smelled;
6. background or demographic questions – regarding the person being interviewed.

The interview guide, found in the appendix, is an overview of the interview questions that were asked during the interviews for the next chapter. The questions should be open-ended and contribute to reflections about common everyday concepts that the project managers are encountering. Therefore, most questions are open-ended, mainly focusing on experience/behavior, opinions, and knowledge (Walters, 2002).

Table 9: Overview of articles used in this paper and corresponding search strings (own production).

No.	Author (Year)	Scope
1	Martens & Carvalho, 2017	Project Management & Sustainability
2	Silvius et al., 2017	Project Management & Sustainability
3	Silvius & Marnewick, 2022	Project Management & Sustainability
4	Wang et al., 2014	Project Management & Sustainability
5	Sabini & Alderman, 2021	Project Management & Sustainability
6	Sabini et al., 2019	Project Management & Sustainability
7	Zakrzewska et al., 2022	Project Management & Sustainability
9	Vrchota et al., 2020	Project Management & Sustainability
10	Toljaga-Nikolić et al., 2020	Project Management & Sustainability
11	Silvius, 2017	Project Management & Sustainability
12	Guandalini, 2022	Digital Transformation & Sustainability
13	Gomez-Trujillo & Gonzalez-Perez, 2021	Digital Transformation & Sustainability
14	Zhang et al., 2022	Digital Transformation & Sustainability
15	Diaz & Montalvo, 2022	Digital Transformation & Sustainability
16	Šimberová et al., 2022	Digital Transformation & Sustainability
17	Hajishirzi et al., 2022	Digital Transformation & Sustainability
18	Pinzaru et al., 2022	Digital Transformation & Sustainability
19	Costa et al., 2022	Digital Transformation & Sustainability
20	Camodeca & Almici, 2021	Digital Transformation & Sustainability
21	El Hilali et al., 2020	Digital Transformation & Sustainability
22	Agafonova et al., 2022	Digital Transformation & Sustainability
23	Kozarkiewicz, 2020	Digital Transformation & Project Management
24	Durão et al., 2019	Digital Transformation & Project Management
25	Carujo et al., 2022	Digital Transformation & Project Management
26	Badewi, 2022	Digital Transformation & Project Management
27	Lavalle & Casale, 2020	Digital Transformation & Project Management
28	Herrero et al., 2020	Digital Transformation & Project Management
29	Altukhova et al., 2018	Digital Transformation & Project Management
30	Correani et al., 2020	Digital Transformation & Project Management
31	Barbosa & Saisse, 2019	Digital Transformation & Project Management
32	Lang & Müller, 2021	Digital Transformation & Project Management
33	Bannikov et al., 2022	Digital Transformation & Project Management
34	Martínez-Perales et al., 2018	Digital Transformation & Project Management

Interview Sampling

This thesis's research questions concern with the project manager's perspective on digital transformation and sustainability projects. Therefore, the interview sample mainly consists of project managers that are working or have worked on digital transformation projects. Additionally, the research questions include questions about competence and experience, making it relevant to narrow the sample even more regarding sector and industry.

For this thesis, the IT consulting industry was chosen. The people needed for this interview are consultants that are currently or have been a part of the management team of a digital transformation project. It was not a requirement that the interview objects work as a project manager today, but preferably they have experience with digital

transformation and digitalization as a consultant. This method of choosing a sample is called purposive sampling and is when the interviewer chooses sample members based on who will be best able to help answer the research questions (Saunders and Lewis, 2012).

The final interview sample is 11 people. In addition to the final sample, around 20 more people were contacted by email and LinkedIn. The other people thought their experience was irrelevant to this thesis or did not respond to the email. Although the sample is non-random, it is a diverse sample with different years of experience and background and working in organizations of different sizes with different visions and goals.

In Table 10, all interview objects are described by their current work title, their current company and its size, their previous experience, and if they have technical education or not. The selection includes a variety of titles; however, all have previous experience as management or IT consultant.

Biases and Limitations of the Interview Sample

During the interviews, the interview objects were asked questions in the order of the interview guide and were allowed to refuse to answer questions. However, the interview guide was used more as a directive, while most interview objects steered the conversation in their direction.

All interview objects were asked about their educational background and previous experience, as well as their experience with digital transformation and sustainability. Otherwise, personal questions were limited and personal data was removed from the transcript to ensure anonymity.

All data from the interviews and recording of interviews are located in a secure cloud solution, ensuring privacy for all interview objects. At the final stages of the thesis, all personal notes, recordings, and private information about the interview objects will be destroyed or deleted.

Table 10: List of interview objects and some additional information (own production).

No.	Current title	Company description	Company size	Experience	Technical education
1	Chief Executive Officer	Public organization working with knowledge sharing in municipal sector	>250	Several years in consulting industry, specifically IT consulting. Worked and led innovation and strategy initiatives.	No
2	Project Manager	IT consulting firm working with digitalization, innovation, and sustainability	>250	A few years of experience as project management consultant in public sector.	No
3	Senior Advisor	Consulting firm working with development projects and management	<250	Several years in the consulting industry, specifically IT consulting. Worked with system architecture both nationally and internationally.	Yes
4	Project Manager / Advisor	Municipality with more than 16 000 residents	>250	Years of experience in private, state, and municipal sector.	No
5	Managing Consultant	Tech company, including consulting and software development	>250	Years of experience as management consultant in IT consulting firms.	No
6	Chief Executive Officer	Software and tech company, consulting and software	<250	Several years in tech companies working with project management and towards customers.	No
7	Strategic Advisor	IT and management consulting company	<250	Several years within IT consulting industry, working with innovation and digital technologies.	No
8	Director of Industrial IT	IT consulting firm working with digitalization, innovation, and sustainability	>250	Several years within operational technology and industrial IT. Worked with solution architecture and cybersecurity.	No
9	Director of Innovation and Technology	Consulting firm working with innovation, transformation and leadership	>250	Several years as IT manager, working with strategic IT and technology management.	Yes
10	Head of Transformation and Strategy	Norwegian Financial Group	>250	Several years as CIO, with responsibilities for development. Worked as a project manager within IT.	Yes
11	Senior Direction	International technology company	>250	Several years as director of supply chain management in large IT firms	No

3.4.3 Reliability and Validity

According to Bryman (2012), reliability is about whether the result of the study is repeatable. *Reliability* can be defined as "The extent to which the results are consistent over time and an accurate representation of the total population under study is referred to as reliability, and if the results of a study can be reproduced under a similar

methodology, then the research instrument is considered to be reliable (Joppe (2000) in Golafshani, 2003).

The same interview guide was used in all interviews, and there was only one interviewer to avoid observer error. Observer error is one of the factors threatening reliability and is described as “the way different researchers may ask the same question in different ways” (Saunders & Lewis, 2012). The interview guide was used as a directive for the conversation, but the interview objects were allowed to refuse to answer questions and steer the conversation to some degree. This might have affected the reliability of the data collection method. However, the conversation was always related to the specific topics, and the openness of the interview allowed all interview objects to be open and elaborate on their specific interests within the research area.

According to Bryman (2012), validity concerns the integrity of the conclusions generated from a piece of research. It is often divided into four types: measurement validity, internal validity, external validity, and ecological validity. External validity concerns whether the results can be generalized beyond specific research context. Several factors can threaten the internal validity of the research findings and conclusions, some of which are subject selection, morality, and ambiguity about causal direction (Saunders & Lewis, 2012).

This thesis’s primary concern regarding internal validity is connected to data collection methods. The appropriate data collection methods were chosen once the vision and goal for the thesis were, to some degree, finalized. The literature review was semi-structured, allowing articles deemed interesting and relevant to be included. The interviews were a semi-structured, allowing interview objects to influence the conversation while the interview guide functioned as an anchor.

For the thesis, interview objects in different areas of Norway with different educational backgrounds and experiences were chosen. Regarding external validity, the sample was chosen non-randomly based on LinkedIn profiles. However, around 30 project management practitioners were contacted, and 11 of them conducted the interview. Despite a small sample, the variation in experience, education, organization, and personality was prominent.

4 Results

This chapter presents findings from the eleven interviews conducted. The interview questions were separated into project management for digital transformation and sustainability. At the end of the interview, all three areas of study were combined to understand of the intersection between project management, digital transformation, and sustainability. The semi-structured nature of the interview made it easier to ensure that the interview objects answered in relation to the relevant research question. The chapter will refer to each interview object non-gender specific and by numbers linked to Table 10.

4.1 Terminology

To understand the starting point for all interviews, all interview objects were asked about their definitions of key terms. The results show that interview objects have a thorough understanding of the concepts but have different focus areas for each interview object.

4.1.1 Digital Transformation

The interview objects' definitions of digital transformation exhibit striking similarities, yet each reflects the interview objects' experience with the concept. The keywords of all definitions and understandings have been summarized in Figure 7, where the size of the word is magnified each time it is mentioned.

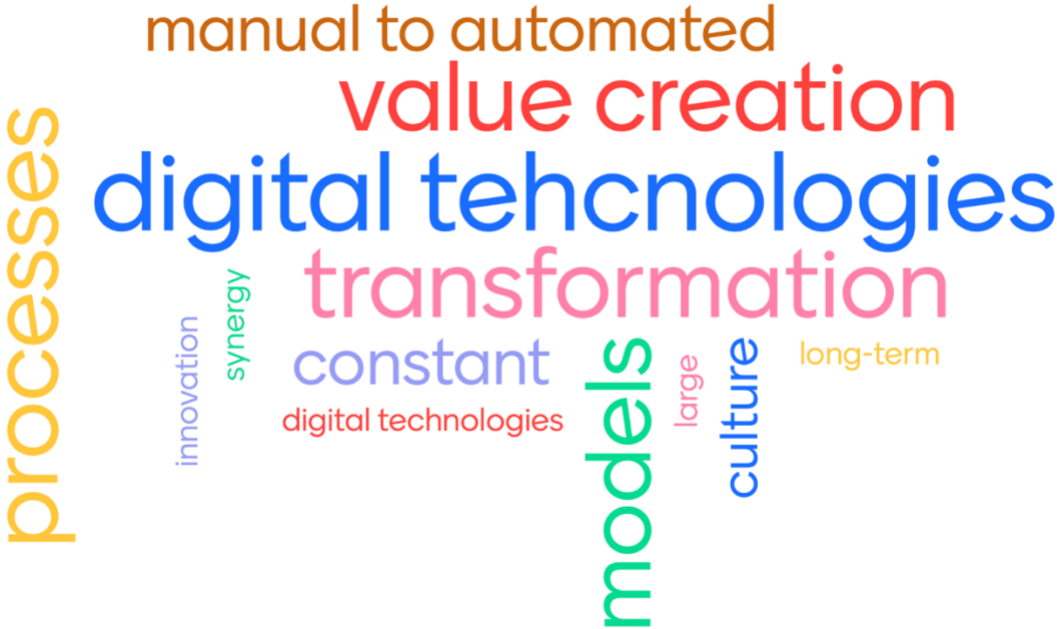


Figure 7: Keywords used in defining digital transformation by the interview objects (own production).

Table 11: An overview of the different keywords linked to each interview object (own production).

Key word (digital transformation)	Interview Object
Digital technologies / tools	1; 2; 3; 4; 5; 6; 7; 8; 9; 10
Transformation	3; 4; 6; 8; 9; 10; 11
Change	1; 2; 3; 4; 5; 7; 8; 9; 10; 11
Large	1
Constant	1; 3; 11
Long-term	1
Manual process to automated process	2; 4; 6
Value creation	2; 4; 5; 7; 9; 10; 11
Culture	5; 8
Processes	2; 4; 5; 6; 8; 9; 11
Models	5; 6; 7; 8; 9; 10; 11
Synergy	6
Innovation	7

8 experience that people struggle to separate digitization, digitalization, and digital transformation. They understand digital transformation as a change in how an organization conducts business, making digital technologies central to the organization and a huge part of everything that happens (8).

Digital transformation is definitively talked about but is currently implemented by few, while digitalization primarily drives technology forward. It is about digital technologies becoming a premise for delivering the organization’s offerings, in the public and private sectors (7). Digital transformation is generally about two things: working with digitalization and facilitating digital technologies (1).

According to 10, their job consists of encouraging comfortable people to utilize new technology and change the business models to improve what already is and encourage new business. Furthermore, they argue that many organizations fail to realize that the business currently collecting money is not necessarily the same business that will make money in the future. Digital transformation is about moving forward, but not so quickly that the organization loses sight of what finances them. It is about the constant balance between “old” and new businesses (10).

4.1.2 Sustainability

The interview objects were asked about their understanding and experience with sustainability, independently of digital transformation. The purpose was to understand how they implement sustainability in their projects and how it has strategically been placed in their organization.

As with digital transformation, it is clear that the word sustainability has different meanings for the interview objects. Figure 8 is a collection of keywords to define sustainability from interview objects.



Figure 8: Keywords used in defining sustainability by the interview objects (own production).

Table 12: : An overview of the different keywords linked to each interview object (own production).

Key word	Interview Object
Circular perspective	1
Long-term	2; 4; 5; 6; 8
Value creation	2; 5; 9
Social sustainability	2, 3; 4; 5; 6; 7; 8; 9; 10; 11
Economic sustainability	2, 3; 4; 5; 6; 7; 8; 9; 10
Viability	2; 4; 5; 8
Outcome	2; 6; 8
Environmental sustainability	1; 3; 4; 5; 6; 7; 8; 9; 10; 11
Ethical sustainability	4
Certified in sustainability	7
SDGs	4; 7; 8; 9; 10
Industry 5.0	8
Strategy	5; 7
TBL	6
Holistic	6

Each interview object has its own experience with sustainability, both personally and professionally. To make an easy overview, each interview object’s experience has been summarized in Table 13. The overview highlights the differences in understanding and implementation of the concept.

Table 13: A summary of the interview objects' experiences and thoughts about sustainability in bullet points (own production).

No.	Experiences with and Thoughts about Sustainability
1	<ul style="list-style-type: none"> - no courses or certifications, but are currently working on internal material for the organization. - personal interests in sustainability, reading a lot about it in their spare time; - primarily concerned about the environmental dimension of sustainability and the physical aspects;
2	<ul style="list-style-type: none"> - some internal coursing through their organization; - primarily focused on long-term value creation from projects and economic sustainability; - little experience from projects where sustainability is not already incorporated in their customer's organization.
3	<ul style="list-style-type: none"> - no courses or certifications; - personal interests in sustainability, reading a lot of articles and reports; - focus on all three dimensions but have the most experience with environmental sustainability because of issues like waste management in their projects.
4	<ul style="list-style-type: none"> - no courses or certifications; - experience more focus on sustainability in the public sector than in the private sector; - notice that sustainability often is joked about, not taken seriously by more traditional industries; - makes them feel a part of something bigger.
5	<ul style="list-style-type: none"> - attended several seminars about sustainability through their organization and have been to university classes where it is a part of the curriculum; - not really any experience with sustainability in projects; - experience that most organizations have a sustainability strategy nowadays.
6	<ul style="list-style-type: none"> - no courses or certifications; - experience that their organization is as sustainable as it can be considering their offerings of software; - previous experience shows how important sustainability can be in the right industry and sector.
7	<ul style="list-style-type: none"> - has only attended internal courses but is enrolling in one course about sustainability in the near future; - focuses on environmental and economic sustainability; - experience that customers include sustainability in the delivery model more frequently.
8	<ul style="list-style-type: none"> - attended several internal courses and were proud of their organization being visible at conventions about sustainability; - draws attention toward the sustainability of I5.0, focusing on human-centric business; - talks about regulations from the European Union (EU) and UN and how they affect organizations.
9	<ul style="list-style-type: none"> - attended internal courses; - experience that many organizations use sustainability to improve their corporate reputation; - see the effect digitalization can have on each of the SDGs.
10	<ul style="list-style-type: none"> - has lectured a course in sustainability; - use SDGs as a starting point for their definition of sustainability; - highlight the importance of talking about sustainability across different industries and sectors.
11	<ul style="list-style-type: none"> - completed several courses from a large portfolio of courses in sustainability; - sustainability will only continue to gain focus and attention from all over the world - highlights the space of opportunity that exist when combining digital technologies and sustainability.

4.1.3 Implementation of Sustainability in Digital Transformation

Missing parameters make it hard for IT consulting projects to focus on sustainability, as the project is mainly measured by performance in terms of scope, budget, and quality (7). Before the project managers are measured on performance within sustainability, the focus will remain the same (7). 2's impression of sustainability in business is that it often is used as a buzzword, with "all talk, no action."

Many interview objects mentioned using the SDGs in their organization as a directive to align their strategy and projects with sustainability (7; 8; 9; 10). According to 8,

sustainability is a huge part of IS.0, where the effect of technology on humans and society is in focus. Digital transformation can be used to incorporate sustainability by optimizing resource usage, business flow, and business models. It contributes to financial sustainability, creating new business opportunities (10). 5 experience that sustainability often is more important in the public sector, more people are concerned about the political and value aspects. However, with more compliance and regulations from the UN and EU, more organizations are shifting their focus toward it (8).

5 experience that the terminology around sustainability is used sparingly, as it comes naturally in the form of economic sustainability and viability of the project (5). As a part of the organization's sustainability strategy, it is expected that the project teams consider sustainability as a part of the culture and way of thinking (5). However, it is not a clear focus on sustainability in the digitalization initiatives they have been a part of (5). On the other hand, they have experienced that the operation department often has a more visual focus on sustainability and how they can be better in relation to environmental sustainability (5).

1 explain their relation to sustainability by focusing their attention on the physical aspect of sustainability, such as effective use of land and energy consumption. The philosophy "less of everything" is central to their understanding of sustainability in business (1). 3 argue that the new "Circular Economy Action Plan" from EU is going to create huge problems for their customers who are investing in transformation and new projects within the construction industry (3).

Most interview objects are surprised when the focus on sustainability in project management courses is discussed. Few courses have incorporated sustainability into their curriculum, which 9 find strange seeing how society has shifted its focus. There seems to be a lack of courses and certifications within sustainability for consultants. Internal courses are the only competence development within sustainability mentioned when asking the interview objects about sustainability.

The organization must constantly think about how it can be better in relation to sustainability (1). How can the organization become more aware of its effects on the environment? (1) The EU's new sustainability requirements will make top management in more organizations focus on sustainability as it is expensive not to consider it (3). It is not only Norway setting strict requirements for the organization, but also the UN and EU (3).

10 say that their organization has involved one person responsible for sustainability in all internal projects. However, they are still determining if that practice will continue as sustainability is more integrated into the organizational strategy, meaning that all employees should keep sustainability in mind. The organizational strategy has defined that sustainability should be incorporated into all businesses (10).

4.2 Digital Transformation and Sustainability based on Experience

Some interview objects argue that the problem with digital transformation starts with the human and not the technology (1; 7). Each interview object was asked what challenges they faced in implementing digital transformation. This subchapter deepens challenges with digital transformation from a project management perspective.

4.2.1 General Challenges

The challenges one sector faces are not necessarily the same as in other sectors. It does depend on all stakeholders involved and their motivation to change. However, change projects are challenging in all sectors because it expects a lot from people who are complex and usually comfortable where they are (10).

Change the Habits and Routines of Stakeholders

According to 6, the main challenge of digital transformation is organizational change for the people. It is not the technology that is complex. It is the mindset and the culture of the organization (7). Many digital transformation projects meet skepticism and resistance to change from stakeholders (2; 4). The implementation of the project will demand changes in habits and routines, from a micro perspective and a community perspective. The transformation will demand stakeholders to change, and they need to be ready for the change, and often, they are not (2). 6 saw that the resistance to change depends on the organizational culture and how they approach change.

Many people are comfortable where they are because they know their job and what is needed from them. However, change means they need to adapt and learn new ways of working despite having the right competence (10). People must change and implement new ways of working, replacing the old and safe methods and moving outside their comfort zone (6).

As a consultant in more traditional industries, project managers often meet resistance as the average age is high and their ways of working are ingrained in them, causing more issues for the people to adapt. People are different and complicated, and their ability to adjust to change and new initiatives can often be limited, especially if they do not have ownership of the changes (5).

Understanding the Project

One of the biggest challenges with IT consulting, in general, is understanding what the customer wants, especially since most are often unsure about their wants and needs. Project managers often enter projects with unclear or changing output and outcomes (2).

Value creation is often forgotten in the presentation of digital transformation because it is hard to define how digital transformation can affect each organization, as the opportunities are unlimited (8). Digital transformation projects are often initialized by steering groups and top management in organizations. 2 argue that steering groups, who decide the strategic direction of the organizations, tend to improve internal processes and forget the holistic view. This can result in small internal value creation but not necessarily any large changes for the organization (2). It is important to be intentional about whom the value is created for and what is being created with the project (2).

Digital technologies are not the goal (8; 11). It might have been in I4.0. However, I5.0 and digital transformation is a revolution and transformation where digital technologies can contribute to an inclusive society (8) and be seen as an enabler (11). The end goal is the user and the effects technology have on humans and society (8). Digital technologies allow for a huge space of opportunity. What effects will digital transformation have on the organization? Thinking in new patterns, digital transformation can provide huge opportunities for the "traditional" business but also allow for new business (9).

However, consulting firms are struggling to sell digital transformation as customer buy effects, and the effects of digital transformation are not specific (8). 9 find that most

customers undergo digital transformation because “everyone else is doing it.” However, they fail to look at the cost/benefit analysis and not focusing on the strategy behind it, planning for success (9). 10 disagree and argue that most customers do see why digital transformation is necessary, but they struggle to see why it is necessary at this moment. The long-term perspective is often neglected because the organization performs as expected (10).

Cost/Benefit

It is expensive to do digital transformation as the organization needs to reallocate resources to new offerings while keeping business as usual (7). “How can an organization know that a project is viable if they have not looked at the numbers?” 2 asks. Digital transformation demands a lot of resources, competence, and skills within the organization. Also, it often contributes to the extra workload for the management as they must handle different dimensions of offerings, which might demand another type of leader than what is currently present (7).

To determine if a project is sustainable, the organization should conduct a cost/benefit analysis, independently of which project it is. 2 states that “often, the analysis is performed after the project is initiated and already moving in the wrong direction.” In IT projects, performing a long-term cost/benefit analysis is more challenging as the time frame is shorter, often only five years ahead of time (2). The organization knows which businesses and offerings are the money-makers today. The chance of it being the money-maker in 5-10 years is not given. Therefore, the organization must look up and forward, seeing the opportunities the future will bring (10).

4.2.2 Private Sector versus Public Sector

The digitalization journey in the private sector is often way ahead of the public sector because it is driven by sector competition, which the public sector experiences differently. 1 emphasize the lack of competition in the public sector as one of the challenges in relation to digital transformation. Digital transformation requires an enormous investment from an organization, and it can be hard to justify the financial cost of implementing these projects without the competition and pressure from the industry to transform and implement digital technologies. The private sector is better at financing in a way that supports the foundation of the project. The budget is looser and easier to adjust. In the public sector, the budget is often stricter, and when the budget is reached, the project must wait until next year before new funding. According to 3, the private sector is better at devoting enough resources to projects because their limited financial constraints compared to the public sector (3).

Additionally, 6 argues that the private sector is significantly quicker than the public sector when discussing about digitalization (6). They think it is related to the problem of decision-making in the sector (4; 6). 4 think there are too many people with power disclaiming their responsibilities, while 6 thinks it is due to the rules and demands the public system must handle. It is often seen that decision-making is easier in the private sector because the roles are clearly defined. Decision-making in the public sector is often more complicated than in the private sector, as the responsibility often is spread out (3). There was a difference between the public and community sectors in efficiency, as the stakeholders are often more involved in the public sector. Stakeholder involvement was experienced as easier to handle in the public sector than community sector (2).

It is also visible that the public sector needs help to define what digital transformation is and what it means for its stakeholders. However, the opportunities for digital transformation are tremendous within the sector, especially in large businesses. An example is the mobile bank, which has stayed the same since it came in 2000-something, and had similar functionality. According to 7, banks have huge potential for digital transformation (7).

4.2.3 Managerial Practices

The interview objects have all experienced digital transformation and have adopted important managerial practices to succeed with the projects. Some practices are based on positive experiences in these projects, while others are recommendations based on failed initiatives. However, all are very relevant in succeeding with digital transformation.

Change Management Practices

The project manager and top management need to be clear about the intentions of change and transformation (2). If there are difficulties in understanding the need for transformation in top management, one better believe it will be resistance to change further down in the organization, too (10). It is important that the project manager try to simplify the change and orient the change around the areas that create the most value for the stakeholder (6). Storytelling is important for the project manager when handling resistance. Trying to make stakeholders understand why the change is necessary and implemented (4). It can help create a "sense of urgency" for the project and maybe help the stakeholders take ownership of it (4).

4 noticed that the sustainability strategy is important, but without ownership and cultural change, it is hard to permeate the organization (4). Digital transformation results from the tasks given to solve and must never stop changing. The organization must constantly be willing to think outside the box and look at new ways of doing things (1). Starting to implement digital technologies where it creates the most value can help create change momentum (6). It is also a tool for the project team to relate action to our goals (4). Prepare the stakeholders for what changes are coming. Communicate the why and how. Show them where the transformation will take them, but do not omit the challenges the organization will face (10).

Management Commitment and Anchoring

Top management commitment is vital when performing large organizational changes (2; 10). Management is an important factor in implementing new processes and adopting new products. The management must commit to the transformation to fully benefit from digital transformation in the organizational offering (6). How they prioritize and take ownership of the changes will leave traces in the organization and the stakeholders' commitment (2; 10). Management needs to be ambassadors and visionaries for the sustainable direction of the organization. They need to be clear on the end goal and the project's purpose. Why should the organization transform, and how can it benefit the stakeholders? If the resources or humans do not understand it, it is difficult to carry out this type of project. The strategy and KPIs must come from the top management to communicate the commitment to the change (5).

The project manager must stay close to the management during a transformation to report on limitations or challenges (7). It is important to have people with power, decision-making authority, and access to budget in the top management. The top management must support the change and should be pushing and promoting the project,

not the other way around (3). It might be difficult to start digital transformation projects because project managers often lack access to people with decision-making authority (9).

According to 8, many organizations use digital transformation as a buzzword, signifying that they do it because everyone else do, not because they realize its benefits or challenges. It is important that the management define the "why." 6 argue that most organizations implement digital transformation because it is a necessity or opportunity for financial gain. Management must look at "what is in it for the organization?" because when they do, 8 argue that the budget and funding often get more flexible. Few organizations implement digital transformation to make their business more effective or because it is exciting (6).

At the beginning of transformation projects, there are few data points. The project manager must refer to previous projects to convince the top management about necessary changes (6). The management must release resources to bet on new business opportunities, even though they could have been used for internal optimization (10).

10 highlights their CEO as a great example of how to imprint sustainability in the organization when the CEO decided to take courses in sustainability to emphasize the focus sustainability will have in the organization going forward. The CEO became a role model for the whole organization, putting sustainability on the agenda.

Stakeholder Involvement and Communication

During a digital transformation, it is important for the project manager to remember the people. In large projects, many stakeholders need to be considered and handled by the project manager (3). Communication is key when working in a project team (2). The stakeholders should not be allowed to decide, but their input should be considered (10).

According to 2, it is important that the project team has fun and is "high under the roof," allowing the team members to encourage engagement and creativity and express their opinions, concerns, and thoughts about the project. In projects, there are two sides to the story, the technical delivery and the people, which are two different aspects that must be considered in parallel (7). An idea is to "plant seeds" with the stakeholders in informal and formal contexts to help spread the message and highlight the focus and value creation from projects and open communication about the project. However, "you can yell how loud you want to, but if it is in the wrong crowd, it does not help spread the word and your message" (2).

2 find communication between stakeholders as one of the challenges in implementing digital transformation. The intersection between technology and business employees might create confusion and misunderstandings (2). There is a deviation between the people who know technology and those who will end up using it in their daily work (9). It is important to involve the affected department in the change project because when handed over, they are responsible for utilizing the business value the project was supposed to deliver (2; 5). Further, they will use the new technologies and change their working methods. The project is not sustainable if there is no one benefitting from the output of the project, resulting in a waste of time, energy, and resources (5).

A thorough stakeholder analysis is necessary to locate who the enemies are, who the allies are, and how they should be treated during the project and the different project phases (10). The project manager must find the key stakeholders early in the

transformation project to have them help convince others about the benefits realization (6). As a part of the stakeholder analysis, organizations should also notice who are possible business partners. By connecting with possible business partners, the organization can expand its business even more (10).

The project manager must help the organization realize the added value of digital transformation, especially in industries with a lack of internal digitalization (6). They must show and communicate the value creation (6). What is the project and its realistic end goal? An important part of being a project manager is the orientation around reality. Transformation without considering the affected people ends with a failed project (7). The project manager is also responsible for communicating the effect and progress of the project. Reporting on digital transformation performance can be highly inefficient and hard to compartmentalize. The best measurement might be the organization's digital maturity throughout the project life cycle (8).

Unlimited Demand for Competence

There will come a shortage of relevant competence and experience to implement a digital strategy and achieve value creation through its implementation (5). Public organizations are gathering top management from organizations all over Norway to come together to learn about digital transformation and how digital technologies can contribute to the growth of their organizations (9). Competence mapping reveals gaps in knowledge in relation to digital competence and digital understanding in organizations. Business developers need to be educated on digital technologies to realize the opportunities that await (9).

"The most effective thing I have done in my project is to acquire as much knowledge as possible about the organization," 2 say. 3 argue that there are two issues with competence in organizations concerning sustainability: lack of people and lack of the right competence (3). It is a constant fight for resources, knowledge, competence, money, and people. 10 argue that sustainability is relevant when discussing competence because competence in society is necessary for digital transformation and further development of digital technologies. Diverse competence and experience are important. Without including different genders, races, religions, ages, and so on, an organization will not have enough competence and people going forward. There is no room for exclusion and discrimination in the globalized world (10).

Utilizing Relevant Framework

As a part of project management practices, the interview objects seem to take advantage of their certifications within project management in digital transformation projects. Several talks about how they use agile framework and PRINCE2 framework, both commonly implemented in management consulting. 9 emphasize project management framework and methodology as important skills for a project manager. The project manager should use a framework as a guideline for the project. However, they should also understand that each project will be different; therefore, the framework must be adjusted and adapted (2).

7 introduces a new framework when working with digital transformation, Di2X, which is used to determine the company's digital maturity. The framework also specifies which abilities an organization must have to operate within the different levels in the model. The framework determines the approach to their project, depending on their current status and where they are going (7).

The Silicon Valley approach is mentioned by 8. The approach is based on a different management style, where the employees are highly independent to allow them to be creative and innovative. Instead of measuring them and reporting everything, the employees have a free leash where it is encouraged to think outside the box (8).

2 has worked with the Norwegian Authorities for the Universal Design of ICT (Digitaliseringsdirektoratet (DigDir)) responsible for following up on regulations on the universal design of ICT solutions. They tell about their experience with DigDir's framework, which is based on the waterfall method, where a project's the end goal often is more specific, and there is a clear direction for the project (2). The project manager should be familiar with relevant frameworks to use them actively in digital transformation projects (3).

Huge digitalization initiatives often require a combination of traditional project management by including a timeline, scope, and budget while including Scrum and Agile practices as a working methodology (5). 4 argue that it is difficult not to have a waterfall methodology approach in development projects because it is hard to start without a specific output in mind (4). However, the agile management approach encourages human interaction and cooperation, again urging relationship and relational management (8).

The characteristics of digital transformation make it hard to follow a framework to the point, and the project manager will likely need to adjust the framework as they go. Some interview objects notice that the most significant difference between junior and senior project managers is their approach to the framework. Junior project managers tend to follow the framework to the point, neglecting the adjustments necessary for each project (7; 9).

Independently of the project management methodology, 2 argue that a holistic view and clear project goals are necessary to succeed in digital transformation projects. However, they continue to state that waterfall, and agile methodologies can work in these projects. It depends on how the project manager manages the project and how they follow through on the framework (2).

Holistic Approach

Several interview objects mention the importance of holistically approaching a digital transformation project from a project manager's perspective (1; 2; 3; 6). Organizations tend to look at their value chains isolated, not realizing the potential that can be found by expanding their view and looking at it holistically. How can the organization, both by themselves and in cooperation with others, exploit the space of opportunity within digital transformation? (10) When people are too fixated on small parts of the new digital technologies, people tend to miss the big picture. The technology they focus on might be a small part of a bigger problem, meaning that resources should be directed in other areas (3). People often understand the change, but the holistic view of starting early is more difficult to understand (10).

An organization's holistic view and long-term planning to facilitate transformation and new business must be incorporated early on (10). From 7's experience, it is important to use horizon thinking based on an old McKinsey framework. The method utilizes three different horizons, looking at different time frames in the planning process (7). There should be clear answers to the five W's: what, when, why, where, and how (2).

For the transformation to have an effect, the project manager must understand the organization and workflows to change and improve internal efficiency properly (6). An organization's starting point should be vital in deciding how to proceed with digital transformation projects (7). One must look inwards at the technology and the organization and if they are capable of transforming and going through such a change (7). All levels of society are being digitalized. If the project manager manages to break down the process and look at the "why" and "what," in addition to the value creation for the stakeholders, it might be easier. Organizations should use digitalization to add value for the organization, not just because "everyone else does it" (6).

As a project manager, one should see what value is created through the project and enable all project team members to identify with the project and take ownership of the project goals. In the bitter end, it all comes back to generating value for the business by involving internal stakeholders and getting them onboard (2). In addition to the project manager thinking holistically, the organization must implement a holistic approach. Most people can specify and perform their tasks. However, thinking about their role in the big picture is just as important (1).

I argue that one of the organization's main challenges is understanding how everything fits together. There is no one-size-fits-all in digital transformation. There are many roads to the goal, and with the right tools and framework, it is a matter of which road the project manager chooses (2). The project manager must understand the organization's architecture and thoroughly understand the organization's value chain. "Hiring consultants without experience with the organization, its architecture, or processes is the recipe for failure" (3). If the transformation aims to be low in the organization, the transformation will not end in value creation (11).

Documentation and Quality Data

Data is essential when using digital technologies. One of the challenges mentioned is the importance of prioritizing good quality data, as data often is re-used later on (1). Changes are often poorly documented, and management needs to understand the importance of documenting projects. It is important to keep historical data in the project to break down the project and each step. This can be important if it is necessary to reduce noise.

It is important to have information available. If the project manager does not know the pace of the project, they should at least know the project's direction. In that way, the project manager can still talk about the steps necessary without basing everything on the pace (10). The documentation is also a tool to reduce uncertainty around the project and where the responsibilities of the project team lay (2). It is about keeping a structure of the processes and focusing on the end goal (4). Many processes, systems, and competence are deficient. Including quality data during the project is essential when introducing new systems or processes (3).

Project Team Composition

The project team should complement the project manager, filling their knowledge gaps and pushing the project manager outside their comfort zone. The project team composition will depend on the project manager and what they feel comfortable with, relations with stakeholders, and their previous experience and education (8). Additionally, the project team members must complement and complete each other regarding personality, background, experience, and competence (9).

Several interview objects focus on the diversity of their teams when working on large transformation projects (5). As necessary as it is to involve stakeholders, involving different profiles in the digital transformation project is also critical (2). The competence among the project team should be broad, covering different sectors and project roles (8). The project manager does not necessarily need to know all about digital technologies. They do, however, need to know who to talk to about digital technologies and who can help them. There should not be silos when working with these types of projects. The project team needs to work across different disciplines to deliver the project deliverables successfully (2).

The team dynamic affects trust and security of the project team. 9 talked about changes made to the team if consultants did not fit the team or felt comfortable where they were. 5 benefitted in their projects by including a change agent responsible for change management. 3 argued that the project team should have people with architecture and planning competence, as architecture will be crucial in digital transformation. Further, the idea is to have a reception team in the lower part of the organization responsible for their department getting training in the new processes and securing a thorough understanding of the project and its impacts on their ways of working.

Working in interdisciplinary teams is standard in the ICT sector. Project managers can benefit from understanding what working in an interdisciplinary team involves (6). The composition of a project team should be carefully considered. If one puts together a team that is too far away for the people affected by the project, the distance might be too big for the people to unfold and embrace the change. For example, a bank upgrading its mobile bank need to involve its stakeholders in the project to reach the correct target group (7).

4.2.4 Summary of Managerial Practices

From the experiences of all interview objects, it is clear that there are various approaches to digital transformation projects. Most interview objects agree on managerial practices; while some focus more on the human aspects, others focus more on the project itself. A summary of all findings is presented in Table 14.

Table 14: Summary of the managerial practices from the interview objects (own production).

Management Practice for Digital Transformation and Sustainability	Interview Object
Change Management Practices	1; 2; 4; 6; 10
Management Commitment and Anchoring	2; 3; 5; 6; 7; 8; 9; 10
Stakeholder Involvement and Communication	2; 3; 5; 6; 7; 8; 9; 10
Unlimited Demand for Competence	2; 3; 5; 9; 10
Utilizing Relevant Framework	2; 3; 4; 5; 7; 8
Holistic Approach	1; 2; 3; 6; 7; 10; 11
Documentation and Quality Data	1; 2; 3; 4; 10
Project Team Composition	2; 3; 5; 7; 8; 9

4.2.5 The Project Manager Role

All interview objects were asked about which personal skills, background, and experience a project manager who manages digital transformation should have. Most interview objects thought it was a difficult question as each digital transformation project can be so different. However, some personal skills and experience were mentioned as general skills for a project manager managing complex change projects.

Personality

Being a project manager is a demanding role, extremely complex at times. Being a project manager in transformation projects is a superwoman/superman type of job because there are so many skills they should have. The project manager should have presentation skills, persuasion skills, be a people person, be hyper-analytical, inspiring, and understand and relate to the project goal and outcome (10). In addition, being solution and possibility oriented in their approach to the project (4).

Project managers should always be curious, testing out new technology and staying on top of the coming trends (1; 4). It is beneficial to acquire new information and knowledge and be interested in learning new things. The project manager cannot fear asking "stupid" questions or asking for help (2). They need to be able to admit that they are the facilitator while the project team members are the experts (4).

Digital transformation projects are complex, and the project manager must be a people person, able to handle different kinds of people within the project (8; 9). Despite everything and everyone, the project manager is responsible for delivering on project milestones and tangibles (8). Making it even harder, as digital transformation often does not have adequately defined milestones or tangibles (8). The project manager must be fearless and not be afraid to express opinions and thoughts to the steering group or project owner in case of unforeseen events, such as delays or budget overruns (3).

Also, being compassionate and human is vital for a project manager (2; 4). It is important to see all stakeholders and "handle" them correctly, considering their opinions and concerns (2). Empathy is an important personal skill for project managers. Understanding the other part affected by the change and willingly contributing to an easier transition for them (6). 7 uses the ADKAR model, which explain 5 different aspects of handling individuals in change: awareness, desire, knowledge, ability, and reinforcement. The model is based on change management, where each aspect encourages and drives change (7).

One of the main tasks of the project manager is to interact with stakeholders, and they need to be able to talk to them and create relationships with them (5; 9). The project manager must be able to speak with all parts of the project, not wait for people to come to them (3; 4). Communicating efficiently with all stakeholders is essential to avoid creating a culture of fear (3). The project manager has a translator role in the project, ensuring all relevant information flows between stakeholders (4). The project manager is a ligament between the project owner and the project team, meaning that they are responsible for communicating demands from the project owner to the project team, but also concerns and limitations from the project team the other way around (8).

The project manager should also be familiar with politics and philosophy to adapt to their stakeholders. An example would be placing consultants who are climate activists in an oil and gas company, where the consultant is struggling with motivation because they are working with something that contradicts their beliefs (8).

Further, the project manager must be flexible and adaptable. They must understand that different projects require different approaches and understanding of the business, the business value, and the organization's business needs (2; 5). The project manager must encourage creativity and innovation and could benefit from being entrepreneurial or driven by change and creativity. It is a complicated role because they must set boundaries, but not so many that people start to pull away, becoming less innovative and creative (8). Lastly, they must trust their project team and, despite everything, understand and believe in the space of opportunity within technology (1).

Background and Experience

9 argue that the project manager's competence around framework and methodology can help create safety and trust among the project team, which can improve progress and identify challenges early on (9). Most interview objects have completed PRINCE2 and ITIL, two commonly used frameworks for project managers in IT consulting. Some customers will be pretty determined about the framework that should be used. Therefore, the project manager should familiarize themselves with multiple frameworks (7).

It can be beneficial for the project manager to have project experience as a participant and a project manager (2; 5; 9). The ability to use previous points of reference can prove critical in the work of the project manager. The experience can also make the project manager more trustworthy in the eyes of the project team (5). Further, the project manager could benefit from experience with projects that experienced both ups and downs (10). The project manager should also have experience with other prominent organizations or at least big digital projects. The experience can help them empathize with the transforming organization (6). It can also help them see red and green flags earlier in the project (3), avoiding unnecessary complications and faults.

Additionally, it might benefit the project manager to familiarize themselves with change management and relevant practices, as these projects will cause tremendous change (2). Being a project manager is about reaching targets and milestones under project delivery. To do this, the project manager must focus on change management (7).

Educational-wise, there are few opinions about the background necessary to be a successful project manager in digital transformation. Many educational backgrounds are compatible with project management (2; 7). In digital transformation, it is important that the project manager understand or is interested in IT and digital technologies even though they do not have an educational background within the field (3; 5; 7; 9; 10). Even though technical competence is not a requirement, it proves useful in digital transformation because the project manager understands the technical language. In addition, they understand some of the technical objectives. They can join in on technical discussions (10), making it easier to understand how digital technologies can facilitate and improve people's everyday life (4, 6; 8).

Further, digital competence can help project managers see the synergies in digital transformation, asking questions such as (6):

- What systems are working today?
- What value are the systems creating?
- How are the systems working together?
- How does the organization perform together?

- What value are the different systems adding across the departments in the organization?
- What is this project about for the customer?

In this industry, the organization must gain experience from trying and failing and not only speaking about transformation theoretically. The experience can give feedback from the stakeholders and, after that, give the expected value (6). In the end, motivation, interest, and enjoyment in working with other people are the most important skills of a project manager, almost independent of the project type (2; 10).

5 Discussion

Based on the literature review and the conducted interviews, this thesis's main purpose was to discover important managerial practices in digital transformation projects while also considering sustainability (Main RQ). RQ1 explores the role sustainability has in digital transformation projects. RQ2 looks at the background and experience project managers should possess. Additionally, it studies which personal skills or personality traits a project manager should have to implement digital transformation successfully. RQ3 focuses more on the technical competence of the project manager. Is it necessary to manage these projects?

5.1 Using Digital Transformation for Competitive Advantage

In organizations, changes are implemented through projects (Toljaga-Nikolić et al., 2020). Digital transformation can be seen as a project where change and transformation are the main outcomes. It is used to change and alter an organization's strategy, business model, offerings, structure, and processes, by introducing digital technologies (El Hilali et al., 2020). However, the complexity of digital transformation makes it hard to understand the space of opportunity that arise (10).

5.1.1 Understanding the Need for Digital Transformation

Digital transformation help organization meet their customers' expectations by becoming more customer-centric, keeping their competitive position in the market, and exploiting new digital technologies and innovation to see new business opportunities (Diaz & Montalvo, 2022; El Hilali et al., 2020; Gomez-Trujillo & Gonzalez-Perez, 2021; Bannikov et al., 2022). Some interview objects raised concerns about customers' understanding of their needs when hiring consultants (2; 8). As a consultant, the main job is to understand the organization one is hired to, understand their current situation, and set a direction for the organization's future (3).

Digital transformation allows organizations to move into adjacent markets by blur market boundaries and breaking barriers to capture new value (El Hilali et al., 2020). Digital transformation can be used as a directive to capture new value by expanding the current offerings by leveraging the knowledge and digital technologies in the organization (Guandalini, 2022; Camodeca & Almici, 2021; Bannikov et al., 2022). 10 talks about how organizations should invest in future business ventures, despite it being a somewhat risky investment. The organization must understand that what business makes revenue today is not necessarily their main money-maker in the future. Businesses must leverage digital transformation to expand their offerings, improving competitive position, and adapt to the dynamic environment of their market.

Customers buy effects (8), and consultants need to know how digital transformation can affect an organization to encourage customers to transform. The effect of digital transformation will depend on the organization, its starting point, the organizational culture, and its ability and willingness to change (7).

5.1.2 Communicate Benefits of Digital Transformation

To make it easier for the stakeholders, the benefits of digital transformation should be communicated (Badewi, 2022). A part of the planning should involve a stakeholder analysis to separate stakeholders into categories depending on their ability to influence or impact the project (Silvius, 2017). The analysis should also consider which stakeholders are important in which phase of the project life cycle (Wang et al., 2014). 10 argues that stakeholder analysis can help uncover enemies and allies in the project during the different project phases (6; 11). It is a necessary tool to see whom the project manager should communicate with during the project, especially in regard to the benefits of the project. Making allies instead of enemies will benefit the organization in the long term, possibly creating long-term alliances for the future.

5.1.3 Challenges with Digital Transformation

It is important to note that change resistance can be detrimental in some digital transformation projects. 70% of digital transformation initiatives fail because organizations are unprepared for change (Costa et al., 2022). The transformation causes considerable organizational changes and will affect governance, strategy, people, leadership, culture, and technology on different levels (Gomez-Trujillo & Gonzalez-Perez, 2021). It will create disturbances in traditional work, which can be uncomfortable and confusing for many. Many interview objects saw human resistance to change as the biggest threat in implementing digital transformation (2; 4; 5; 6; 10). People are comfortable doing what they are familiar with. However, organizational changes are inevitable if the organization wants to change in the dynamic market and globalized world.

Another huge challenge is to understand the necessary financial commitment the organization must make. The literature includes few findings about the economic aspects of digital transformation in all project stages (Jørgensen, 2022). A project must be viable to secure value creation for stakeholders, regardless of the value created. 7 recognize digital transformation as an expensive initiative that demands resource allocation and investments. 2 argue that cost/benefit analysis can help determine the viability of these projects. Digital transformation is not necessarily beneficial in the short-term perspective, and the outcome often contributes to value creation in the future, more so than momentarily. The organization must see digital transformation as a long-term investment, resulting in long-term competitiveness and as an enabler for economic sustainability.

5.1.4 Sustainability as a Part of Digital Transformation

Digital transformation is an enabler for sustainability by using digital technologies to improve the world's economic, social, and ecological conditions (Šimberová et al., 2022). Sustainability is becoming increasingly visible in the customers' delivery models (7) in combination with increased pressure from society (1).

According to Pyka (2017), digital transformation projects contribute to economic sustainability for organizations by optimizing internal processes with digital technologies. It is beneficial for organizations to look at the viability of transformation projects to collect information about value creation for stakeholders (Carujo et al., 2022). Some interview objects highlighted the importance of cost/benefit analysis to evaluate project outcomes and the viability of their investment (2; 7). Conducting viability analysis before

initiating a project is beneficial for several reasons, such as calculated value creation for stakeholders, funding from top management, and support from various stakeholders.

Social sustainability considers the human capital and society during projects (Costa et al., 2022). The dimension is important to consider during digital transformation as it affects the inclusivity and accessibility of offerings from organizations (Gomes et al., 2022). Inclusivity can also be relevant when talking about project teams. 10 argue that organizations that fail to include different genders, and nationalities, will lose crucial competence. There is no room for exclusion in a diverse project team. Equality and inclusion are central parts of social sustainability.

Environmental sustainability is often the most “well-known” dimension of sustainability, receiving the most attention on social media. The corporate reputation of organizations is directly linked to their impact on the environment (Toljaga-Nikolić et al., 2020). The new laws and regulations regarding environmental sustainability because of legislative regulations from the EU and the UN contribute to a higher pressure on project managers to incorporate sustainability (9; 11). The SDGs from UN are used as directives for many organizations developing of their sustainability strategy (7; 8; 9). The high focus on the climate crisis is impacting organizations and is shifting customers’ delivery models (7).

5.2 Succeeding with Digital Transformation as a Project Manager

The complexity of digital transformation raises the expectations of the project manager and the project team. Therefore, being conscious of managerial practices can help project managers succeed.

5.2.1 Planning for Success

Camodeca & Almici (2021) argues that stakeholder involvement positively impacts on digital transformation in the organization because they provide a clear understanding of implications and concerns from all stakeholders. According to Costa et al. (2022), digital transformation is oriented around customers and their experience. Meeting customer expectations is important to maintaining the organization’s competitive position in the market (Pinzaru et al., 2022). It is also necessary to perform a stakeholder analysis to determine how each stakeholder should be managed (Lang & Müller, 2021). To understand the customer needs, the project manager needs to know the organization and its architecture (3). Some stakeholders will be the project’s allies, some are enemies, while others are neutral, all required to be managed differently (10). The stakeholder analysis should be used as a guideline for project managers on managing each stakeholder and where and when to involve them.

The literature needs to pay more attention to understanding customer needs. Most articles mention the importance of meeting customer expectations, but not so much about how to define and concretize the actual output and outcome the customer wants from projects. 2 experience that customers often struggle to see what their organization wants and needs from ICT projects, and in the same way digital transformation. The goal is value creation. However, it does depend on the organization and their vision.

The sustainable project management approach mentions a holistic mindset as necessary to involve all three dimensions of sustainability. There is little information about holistic mindset in the digital transformation literature. However, several interview objects emphasize the importance of a holistic view (1; 2; 3; 6). The holistic approach restrains

project managers in isolating value chains but expands their view, allowing the project manager and their team to seize new business opportunities and create synergies.

Digital transformation projects require a strategic vision and a realistic implementation plan (Bannikov et al., 2022). Many articles suggested an agile project management approach because of the detailed short-term and tentative long-term plans (Laufer et al., 2015). 7 mentioned their approach to horizons thinking, looking at different time horizon during planning. There were many interviews that did not mention the planning process. However, several practices mentioned during the interviews can be categorized as parts of the planning process, such as change management, stakeholder analysis, cost/benefit analysis, holistic project approach, and project team composition. Planning is crucial to succeed in these projects and as a part of the change management practice.

5.2.2 Change Management to Succeed

Change management is used to help understand and take ownership of changes (Pacolli, 2022). It is a practice that most project managers can benefit from implementing, with precise practices to help stakeholders adjust to change and also support them throughout the process (Herrero et al., 2020). From 5's experience, the project benefitted from involving a change agent in the transformation project. The change agent can be a possible advantage in large projects, where it is huge workload for the project manager, making it hard for them to give change the focus it requires.

It is important to remember that change disrupts traditional business, forcing digital technologies to become a more significant part of the new business model and society (Zhang et al., 2022; El Hilali et al., 2020; Gomez-Trujillo & Gonzalez-Perez, 2021). The goal of digital transformation is not digital technologies but leveraging these to benefit all humans (8; 11). 8 argue that digital technologies should be used as an enabler for society. However, sometimes some parts of the population are neglected in the attempt to digitalize the whole society. While digital technologies are becoming increasingly central in society, it is important to look at all end users and see how it might create exclusion and the feeling of being left out for people who struggle to follow along with the shift to digital technologies.

Project managers should cultivate creativity and innovation to benefit from digital technologies fully (Šimberová et al., 2022). Digital transformation will affect the whole of society, and it is important that the project manager recognize this. Innovation is a significant strategic move to achieve business objectives and meet changing customer expectations (Altukhova et al., 2018). In the interviews, innovation was indirectly mentioned through the enormous space of opportunity that lies within digital transformation, digital technologies, and sustainability (9; 11). With new digital technologies, old problems can be reassessed and solved. Innovative and creative minds can help solve societal issues with the help of new technology, new offerings, and stakeholder cooperation.

Educating employees to correctly use and implement digital technologies is vital to a successful digital transformation (Altukhova et al., 2018). In the same sense, the interview objects emphasized the challenge of delivering a project to the customer, where no one has been a part of the project and understood the new technologies that are implemented and have replaced the old way of doing things (2; 4). As a part of the implementation plan, project managers must include some education or training in digital

technologies. The education or training builds new competence and cultivates a learning culture where people are encouraged to expand their knowledge of various technologies.

5.2.3 The Project Manager Role in Digital Transformation

When managing projects, it is imperative to understand the project manager's role and position. The literature and interview objects agree that the project manager has a vital role in the success of digital transformation projects. However, different opinions exist about how the projects should be approached and who should manage them.

Project Management Framework and Methodology

According to PMI (2008), project managers are responsible for successfully implementing the project and reaching the project objectives and goals. Digital transformations are multifaceted projects, demanding effective project management and a framework that can handle the project's complexity (Bannikov et al., 2022).

The literature does not recommend any specific project management certifications. However, it does mention the agile approach as a best practice for projects where the output and outcome are adaptable to change throughout the project life cycle because of its possibilities for flexibility and seizing new opportunities (Correani et al., 2020). Most interview objects had standard project management certifications, such as PRINCE2 and ITIL. In addition, everyone had experience with an agile approach, commonly implemented in ICT projects. The interview objects also suggested other frameworks concerning digital transformation projects. 2 believe there are several ways to reach the project goals. It all comes down to the project manager and their chosen framework. Also, it is important that the project manager can modify the framework and their project approach to the individual project. Especially in digital transformation projects, there is no one-size-fits-all approach.

Silvius (2012) also found that the project manager can influence and is responsible for all aspects of projects sustainability. This implies that project manager needs to be aware of their role in relation to sustainability and sustainable objectives in the project. 10 tell about their shift in project team composition, where they will start to remove the role of sustainability responsible. The shift result from their sustainability strategy, where all employees are expected to familiarize themselves with sustainability and incorporate it into their project tasks. However, there will still be a person or team with a sustainability focus, continuously improving the strategy and functioning as a mentor for the project managers (10).

Personal Skills of a Project Manager

The project manager role is a tough and, at times, ungrateful role. The literature review did not uncover any specific personality traits for project managers but highlighted the importance of soft skills (Bannikov et al., 2022). From the interview objects, there were many favorable traits mentioned. The project manager should be hyper-analytical, inspiring, curious, compassionate, flexible, adaptable, and a people-person. In addition, they should have presentation, persuasion, and good communication skills, and be solution- and possibility-oriented (1; 2; 3; 4; 5; 6; 7; 8; 9; 10; 11). There are no correct answers, but these are the personality traits or personal skills that might help the project manager succeed.

In addition, Bannikov et al. (2022) argue that project managers should be aware of legislative changes to leverage government support. 1 and 3 discuss the politics involved

in the project manager role. Especially in the public sector, but also in the private sector, it is important to be familiar with the politics around the project and are critical stakeholders (2; 3). The politics might also be relevant in relation to the legislative regulations, which affect the projects and the sustainable objectives of the projects.

Necessary Background and Experience for Project Managers

The literature did not specify much about the relevant background and experience project managers should have. The majority focused on best practices and how managers should handle the project and its stakeholders. Even though many educations and backgrounds are compatible with project management (2), project experience is necessary. The more diverse project experiences the project manager has, looking at size, industry, sector, and more, the more they have to "bring to the table."

According to Bannikov et al. (2022), technical skills are essential and digital transformation should be done by specialists with the appropriate qualifications and relevant skills. All interview objects agree that there is no need for technical background or education. However, it is vital that the project manager is interested in digital technologies and IT and is looking for the space of opportunity from digitalization and digital transformation (1; 2; 3; 4; 5; 6; 7; 8; 9; 10; 11). It is worth mentioning that understanding technology or having technical competence is helpful as a project manager (1; 3; 10; 11).

5.2.4 Success Criteria and the Need for Sustainability

The traditional measures for project management success are based on how the project performs on time, scope, and budget (Samset, 2009). Sustainable project management incorporates measurements that consider the long-term outcome in the economic, social, and environmental dimensions of sustainability for the project to include measurements that surpass the project and look at long-term impacts (Vrchota et al., 2020). While sustainability literature suggests measurements, digital transformation literature has few measurements besides digital technologies that are easily implemented (1).

Hard to Measure Digital Transformation Projects

Digital transformation projects are hard to measure because of their complexity and unpredictability. The projects will vary based on who and where they are implemented; therefore, finding standardized measurements might be tricky. The literature did not suggest any specific measurements on performance for digital transformation but did introduce some long-term measurements from a sustainable project management approach (Vrchota et al., 2020). The interview objects also struggled to find performance measurements in digital transformation projects. 5 mentioned the Di2X framework, which allows the organization to evaluate its digital maturity, which should be subject to change throughout a digital transformation project.

Table 4 shows huge differences between project management and sustainability because of the short-term focus versus the long-term focus (Silvius, 2012). As with I5.0 and digital transformation, sustainability is more oriented around people and society, focusing on social sustainability (5). Table 4 illustrate the challenges with the traditional project management approach and a future-oriented mindset, signifying that project management must be adjusted and adapted to the changing requirements of customers and society. The future-orientated approach to the project can be the beginning of new measurements for digital transformation projects, where long-term effects can be considered.

Look at All Dimensions of Sustainability

A sustainability strategy should be anchored in the organization, going from the top management and down throughout the organization (Vrchota et al., 2020). According to Gomes et al. (2022), there are several managerial practices for project managers to help them improve in the different dimensions of sustainability. The interview objects were asked about sustainability in relation to digital transformation. However, there were various experiences on sustainability and how to use it in digital transformation, see Table 13.

Economic sustainability should mainly orient around stakeholders, communicating with them, and understanding the value chain (Gomes et al., 2022). From the interviews, several mentioned cost/benefit analyses to ensure economic performance and profit from the project (2; 7; 10). 5 argued that economic sustainability was common knowledge in projects, as they have to be viable for the organization. However, looking at the collected information from this thesis, customers neglect the cost and investment that digital transformation and sustainability require. Therefore, ensuring that the customer understands the financial preconditions of the transformation is an integral part of the preparatory work.

Managerial practices for social sustainability include creating a safe community for stakeholders, communicating, involving more people in decisions, and encouraging creativity and open-mindedness (Gomes et al., 2022). From the interviews, it seems like most project manager considers social sustainability by looking at their impact on society. 10's vision for the future of their organization is inspiring, hiring, and including a more diverse population to avoid colossal impact from the future scarcity of digital competence.

Environmental sustainability challenges must be addressed by transforming existing businesses, for example, through digital transformation (Diaz & Montalvo, 2022). Traditional project management approach tends to prioritize profit without considering the environmental impacts of their project (Toljaga-Nikolić et al., 2020), which could be justified by considering the performance measurements used in the management approach. Most interview objects mentioned environmental sustainability in their definition (1; 3; 4; 5; 6; 7; 8; 9; 10; 11). However, their experience with sustainability suggests that there is room for improvement in the ICT consulting industry in combining projects with environmental sustainability.

5.3 Managerial Practices for Digital Transformation and Sustainability

The literature review and the interview objects had several managerial practices that could help the project manager succeed. Many of the managerial practices had common factors. In Table 15, the managerial practices from the literature on digital transformation and sustainability have been combined with the findings from the interviews. The result is a list of 10 managerial practices, summarizing all findings and describing them briefly.

Table 15: Summary of all findings in relation to managerial practices for digital transformation projects, where sustainability is considered (own production). The colors represent findings from the digital transformation literature (blue), the sustainability literature (green), and the interview objects (pink).

Findings from literature and interviews	Combined Practice	Description
Stakeholder Management and Communication Stakeholder Management and Communication Stakeholder Involvement and Communication	Stakeholder Management and Communication	The project manager should perform stakeholder analysis to determine how to manage all relevant stakeholders to their project. This understanding will help project managers on how to communicate with them throughout the project and in the specific project phases.
Management Commitment and Anchoring	Management Commitment and Anchoring	The project manager must have top management, project owner, and steering group support. The support will help solidify the purpose and vision of the transformation project throughout the organization.
Whole Life Project Management Project Planning Long-term Objectives Aligning Projects with Strategy Holistic Approach	Holistic Project Planning	The project manager must implement a holistic perspective when planning the digital transformation project. The project objective should include long-term objectives focusing on the project's economic, social, and environmental impacts. Additionally, the project should align with the organizational strategy, helping to anchor the new digital, sustainable strategy.
Change Management Practices Change Management Practices Change in Organizational Culture Change in Organizational Culture	Change Management	The project manager should implement change management practices to help stakeholders adapt and adjust to the changes. The change will affect different levels throughout the organization, which the project manager should carefully consider and plan for, seeing that there will be resistance to the change, highlighting the importance of communication once again.
Viability Analysis	Viability Analysis	The project manager could benefit from performing a viability analysis to ensure the project's economic sustainability. The results could also be used as a part of change management, where the project's financial benefits will benefit the stakeholders long-term.
Innovation Innovation	Innovation	The project manager should encourage creativity and innovation among their stakeholders. When working with new digital technologies and sustainability, the organization has unlimited opportunities.
Educate and Train Employees Unlimited Demand for Competence Project Team Composition	Competence Building and Diversity	The project manager should encourage competence building seeing that it will benefit both the project and organization in the future, preparing for scarce digital competence that might come. Diversity will be necessary for the organization to capture competence. The project manager should also compose diverse teams of different ages, genders, nationalities, competence, background, and personal skills.
Utilizing Relevant Framework Agile Project Management Agile Project Management	Utilize Relevant Framework	The project manager should utilize a framework corresponding to the project's objectives, goals, and stakeholders. They might benefit from an agile approach, where flexibility and adaptability are central. However, recent findings suggest that many frameworks could work in digital transformation. It really depends on the project manager, their project team, and their customer (more consulting-specific).
Understanding the Project Manager Role in Sustainability	Project Manager Role	The project manager should continuously look at their role and evaluate it in their current project. The project manager should be a role model and

Project Manager's Skills		communicate efficiently with all stakeholders. They often benefit from people skills and rely on their background and previous experience, which can help them gain trust in the project team.
Documentation and Quality Data	Documentation and Quality Data	The project manager can benefit from documenting the project and ensuring quality data throughout the project. The data could be used to make better decisions, look back at previous progress and projects, and discover possible pitfalls.

6 Conclusion

Digital transformation is increasingly becoming a tool for organizations to increase profit, expand their offerings, and keep their competitive position in their own and adjacent markets. However, digital transformation projects are complex and multifaceted, and it is important to realize the value and importance of effective project management to implement these projects successfully and achieve sustainable outcomes.

The main research question is directed toward finding managerial practices that can help project managers succeed implementing of digital transformation and sustainable objectives. Several managerial practices were found through an extensive literature review and interviews with project manager practitioners. The managerial practices include practices that look at the human aspect of the projects, such as stakeholder management and communication, change management, competence building, and innovation. Another important category among the managerial practices is preparation and planning, where management commitment and anchoring projects in the organization, holistic project planning, viability analysis, and documenting quality data were mentioned. The last category of the findings of the managerial practices is the project manager, their role, skills, and experience.

The main research question shows that project managers play an enormous part in these complex projects. RQ2 and RQ3 asked questions about the necessary project managers' skills, backgrounds, and experiences. The literature focused more on project managers' practices than personal skills. However, the interview objects explained the importance of having a competent and skilled project manager in digital transformation projects. They should be familiar with relevant methodology and framework and can benefit from experience from other huge, complex projects, both successful and unsuccessful. Education-wise, there are no expectations for a specific education as project management can be combined with many backgrounds. However, it is emphasized that the project manager should be interested in or motivated to implement digital technologies. Technical competence is not required but might benefit the project manager with communication flow between stakeholders and understanding of the project requirements and delivery.

The project manager role is demanding and complicated, and there might be some personality traits and personal skills that can help the project manager succeed. Some mentioned are hyper-analytical, inspiring, curious, compassionate, flexible, adaptable, and people-person. In addition, they should have presentation, persuasion, and good communication skills and be solution- and possibility-oriented. However, huge, complex transformation projects have no one-size-fits-all project manager. There is no right or wrong way of managing these projects, but some traits, skills, and experience can help along the way to a successful project.

Lastly, RQ1 investigated the role of sustainability in digital transformation projects. The findings from this thesis suggest that sustainability has a huge role in these projects as the perspective and project goals are long-term, looking at the project's economic, social, and environmental impacts. Economic sustainability work as a driver for digital transformation in many organizations for financial gains. Social sustainability impacts the

outcome of projects, focusing on inclusion and accessibility for society. Environmental sustainability is definitively a driver for some organizations, while for some, it is more directives followed by legislative regulations from the government, the EU, and the UN. Nonetheless, sustainability is not only driving digital transformation forward. These projects result in long-term outcomes that benefit the organization and society.

6.1 Further Works

- Look at the differences in challenges for the public and private sectors with digital transformation initiatives: Several interview objects highlight the different challenges of implementing digital transformation in the public and private sectors. Looking into these differences might help project managers succeed in both sectors and help explore the challenges practices in-depth.
- Look at the implementation of digital transformation in different sectors: Sectors might experience different challenges in implementing digital transformation. As pointed out in the thesis, not all sectors will experience the same challenges. Therefore, it might be interesting to see what challenges can be found in each sector and also look at the sustainability perspective, seeing if some sectors focus more on sustainability than others.
- Look at project managers in digital transformation pre- and post Covid-19: Project managers had to change their managing style drastically due to the pandemic. Have any significant managerial practices been removed or included that are helping project managers succeed or not succeed? Are there any differences in managerial practices pre- and post-pandemic in the literature?
- Practical study of this theoretical study: This thesis presents several managerial practices, where most are good practices for digital transformation projects. However, it might be interesting to see how accurate these results are by doing practical studies with project managers with different project management approaches, experiences, attitudes toward change, and so on. The practical studies could also show how managerial practices can be implemented in projects to see if they benefit the manager and help with project success.

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Appendix A: Interview guide

Project Managers within Digital Transformation Projects with Focus on Sustainability

INTERVIEW GUIDE

<i>Type of organization:</i>	<i>Industry (e.g. NACE-code):</i>
<i>Country the organization operates within:</i>	<i>Date/time of interview:</i>
<i>Role description:</i>	

1. Can you tell me about your background, what is your role in the organization and what work do you do in your organization?
2. How would you define sustainability?
3. What is sustainability for you in
 - a. your projects?
 - b. your organization?
4. What are some main challenges that you face as a project manager when it comes to implementing sustainability into your project?
5. Did you have any course/education about sustainability in ..., and in that case, what kind of courses, what you learned, and who arranged them?
 - a. your education?
 - b. your organization?
 - c. on your spare time?
6. How would you define digital transformation?
7. What is your experience with digital transformation?
8. What challenges have you faced when implementing these projects as a project manager?
9. Do you have different roles to manage the challenges that arise from implementing sustainability or during digital transformation projects? In that case, which roles and how to you assign them?
10. How do you build your teams when implementing projects which concern digital transformation and sustainability?
11. What is required for project managers to lead digital transformation?
 - a. background
 - b. skills
 - c. experience
 - d. other
12. Do you notice any difference in approach to sustainability or digital transformation between junior and senior managers? In that case, what is the difference?
13. Something to add. Something else we should have considered, asked or thought of?

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