

Final Thesis

NAVIGATING THE DIGITAL HORIZON

Analyzing Digital Transformation (DT) Phases and Business Process
Management (BPM) Maturity in Organizational Evolution

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ABSTRACT

The evolving digital landscape has introduced organizations' reliance on innovation and adaptation to maintain their market position. This research addresses the need for a framework combining digital transformation and business process management to optimize organizational performance by closing the gap between theoretical concepts and their practical implementation. With a literature review, the research dives into existing theories and models, finding that no universal definition exists for digital transformation, prompting the creation of a new definition. While independent models for digital transformation and business process management maturity exist, an integrated framework has yet to be developed. Drawing inspiration from the strengths and weaknesses of existing models, a new conceptual framework is proposed to provide organizations with an approach to navigating complex business environments. This model is validated through academic application and organizational case study, with several iterations based on feedback to elaborate the presented information further. The model is assessed in a corporate context, laying the foundation for uncovering and further exploring the relationship between digital transformation and business process management maturity. The current maturity levels are evaluated through a case study and qualitative interviews with key stakeholders. Findings indicate that while a foundational relationship can be identified, several aspects were not initially considered, such as change management and culture, which are highlighted in interviews and must be incorporated into the framework. This research provides a starting point for understanding the dependencies of the maturity levels. The implications of these findings outline the importance of continuous refinement and validation of the proposed framework to leverage these capabilities fully.

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1 INTRODUCTION

The influence of new technologies has introduced the need for change and innovation in the digital landscape. As organizations have met these multidimensional challenges, integrating digital transformation (DT) strategies has become imperative to maintain their position amongst market competition (Kraus et al., 2021).

This research focuses on uncovering and describing the relationship between DT and business process management (BPM), as the initiative's success depends on operational procedures and value delivery, not just digital competencies. BPM is defined as the approach to exploring, analyzing and streamlining business processes while ensuring reproducibility of outcomes while maintaining alignment with strategic goals (Dumas et al., 2018; Rosemann & vom Brocke, 2015). As BPM encompasses diverse efforts to improve performance and sustainable growth, the focus areas for this research will be narrowed to the process design, analysis, and optimization subtopics.

Upon finalizing the research, the main objective is to assess the necessary BPM maturity level to support a mature DT. The new proposed framework will be implemented by conducting a real-world case study to validate its robustness and generalizability. By identifying the influential factors contributing to a sustainable DT, valuable insights can be provided for organizations navigating similar challenges in an ever-evolving business landscape.

This intertwining relationship addresses challenges and uncovers potentials brought forth by the digital age on multiple levels. It will offer organizations guidelines for adapting and utilizing the benefits of DTs by introducing strategic decision-making, adaptation to change, and sustainable innovation by considering environmental and societal implications (Russell et al., 2020; Schwarzmüller et al., 2018).

2 RESEARCH DESIGN

2.1 *Problem Statement*

The challenge this research addresses is two-sided: one concerns the academic perspective, while the other focuses on a more practical approach in a societal context.

2.1.1 **Academic Perspective**

DT is not a groundbreaking concept; however, there has been increasing attention to further exploring digital technology integration within an organization in recent years. Therefore, there is literature that examines the connection with business processes. These strategies are focused on serving as a catalyst for organizational efficiency and stimulating innovation. DT is an overarching strategy composed of multiple initiatives incorporating digital technologies, while BPM is a somewhat analytical approach to streamlining operations to strive for operational success (Baslyman, 2022; Van Veldhoven & Vanthienen, 2022). The limited research can be due to the fast-paced and evolving domain in which research cannot sustain external factors, such as market trends and regulatory changes (Oludapo et al., 2024).

Given the existing knowledge of DT and BPM, more scientific investigation is needed into their relations and effects on one another. The research conducted throughout the thesis focuses on a combination of DT and BPM maturity models. A later section of the document will discuss the existing knowledge on the topic.

Looking into DT and BPM and proposing a new framework will benefit by creating a more holistic understanding and analysis of their interdependence. The goal is to develop a guideline and set the foundation for future research in dynamic digital development by addressing and mitigating emerging challenges. The framework will help navigate complex digital initiatives and enhance collaboration while facilitating a smoother transition.

2.1.2 **Societal Impact**

Although academic research has been carried out regarding DTs, more industry knowledge and implementation are needed (Baslyman, 2022). Organizations have shifted their attention to adapting to the rapidly evolving digital landscape to maintain their market position and deliver value.

DT is a proposed solution for more efficient and optimized work by adopting technologies to leverage the full potential of digital advancements. This can only be implemented considering the business processes within the organization, which create value and a shift in mindset.

The lack of literacy in DT and BPM will suppress an organization's competitive edge and value to the customer market (Leão & da Silva, 2021). It is pivotal that organizations are aware of DTs, the changes they will bring to the organization, and how they are closely related to daily operations. The inability to successfully implement DT can lead to a plateau in productivity and adaptation to the developing market (Oludapo et al., 2024).

Understanding the academic relationship between the concepts is essential from a research perspective; however, practical application will strengthen the understanding of realistic practices (Baslyman, 2022).

Integrating BPM and DT in an organizational context is critical for thriving in the digital age. Organizations must consider the interdependence of these initiatives to strengthen their digital resilience, achieve operational efficiency and foster innovation in the rapidly changing digital landscape (Nkomo & Kalisz, 2023).

Research into creating a new framework for DT and BPM addresses several challenges organizations face. The framework enhances efficiency and productivity by streamlining operations and automating redundant tasks, allowing companies to operate more smoothly and cost-effectively. It helps companies stay competitive by adapting to market changes and leveraging new technologies. Improved data integration can enable better decision-making while risk management strategies in the BPM process proactively mitigate vulnerabilities. Ultimately, this comprehensive approach leads to more agile, resilient, and customer-focused organizations, benefiting society by creating more efficient and influential enterprises.

2.2 Research Objective

Upon completing the research, the primary goal is to discover, based on the DT maturity levels, what maturity level of BPM is required to reach a level five DT. Level five DT maturity refers to the highest stage, including a fully integrated and optimized initiative across an organization. This will help further understand how combining these factors influences an organization to provide the maximum value.

2.3 Research Contribution

Based on the research objective, the intended contribution is a framework built from an academic standpoint to characterize the relationship between DT and BPM. It will be applied and validated at Royal HaskoningDHV. The organization is interested in this research as it desires to implement DT. With the evolution of the digital landscape, Royal HaskoningDHV is seeking to optimize standard business processes and adopt complementary digital solutions to help maximize value and ensure long-term success.

The research will provide insight into the organization's understanding of BPM and DT and how they view their internal processes about the newly proposed framework. This could serve as the groundwork for aligning perspectives and organizational goals. Presenting them with complex scenarios will encourage an analytical mindset to identify and potentially confirm pain points, discover the growth potential, and build confidence in their capabilities.

2.4 Research Context

The organization is an international engineering consultancy firm with over 140 years of expertise focused on sustainable solutions to impact the world positively (*About Us*, n.d.). Royal HaskoningDHV aims to serve nine global leading markets by innovating sustainable solutions to embrace limitless possibilities by enhancing society together (*Global Consulting Engineering*, n.d.). The organization is structured in multiple business lines and is responsible for its segmented customer-facing markets. The employees seek out support from the corporate groups that optimize business processes. The research will be positioned to investigate the maturity of the most central project management process performed in an Enterprise Resource Planning (ERP) solution. Risk assessment and management are essential components that fall under project management. This is a standard process for identifying, analyzing, and mitigating potential

project challenges. With a proactive approach, the team can strengthen the project's resilience. The choice for this case study makes for a soundproof concept as this process is well structured and bound with clearly defined rules.

From an academic and practical perspective, the thesis will help bridge the gap between theoretical frameworks and their limitations in considering external factors while concurrently validating the new approach within an organization. It provides feedback from professionals while validating the proposed approach and ensures that the findings are robust. This research can serve as the groundwork within Royal HaskoningDHV and even extend beyond the domain of engineering consultancy.

2.5 Research Questions

The research addresses the academic gap and the societal consequence of the need to understand better the relationship between BPM maturity level and the context of sustainable DT implementation.

The research aims to answer the following overarching question:

How can organizations assess their business process management maturity to support their level of digital transformation with a focus on the risk assessment process?

The main research question (MRQ) explores the presumed relationship between DT and BPM and aims to identify the optimal way to represent this relationship visually. Within the context of the thesis assignment, the proposed framework will be validated at Royal HaskoningDHV, with a specific focus on analyzing the risk assessment process as identified by the company supervisor.

The MRQ is supported by the sub-research questions (SRQ)s defined below.

- *SRQ1: What is the definition of digital transformation which will be used in this context?*

This question helps build a uniform definition of the DT concept, as it will be used throughout the research. Using academic literature, reoccurring phrases or keywords will be extrapolated to structure a holistic overview of the concept. The definition will be validated through expert interviews to serve as the focal point of the conversation. Insights may lead to further refinement of the wording.

- *SRQ2: What aspects of business process management are crucial for digital transformation maturity models?*

BPM is the other factor explored within the research. It is essential to understand the concept defined in academic literature and what characteristics of a BPM maturity model may influence the successful implementation of a DT strategy. This will strengthen the reliability and validation of the communication of research conclusions.

- *SRQ3: What are the demands of each maturity model used to describe the relationship between business process management and digital transformation?*

Having a common understanding of the main ideas and the components that relate to them provides context and boundaries. This helps keep the research focused and reduce scope creep.

- *SRQ4: What will the outcome model represent the relationship between digital transformation and business process management?*

Identifying the incorporated criteria will be used as input to determine and visualize the desirable BPM maturity level for a successful DT implementation.

- *SRQ5: Is the proposed framework valid when applied to an engineering consultancy firm?*

The proposed academic framework will be assessed in a specific context to validate its components using a single case study.

3 RESEARCH METHODOLOGY

The document section will outline the approaches and strategies used to obtain a comprehensive answer to the research questions.

3.1 Research Approach

Research for the thesis is carried out according to the principles of design science, which focuses on studying Information Technology (IT) tools given a specific context. It iterates over designing and investigation, emphasizing the refinement loop and development of solutions. The design task is divided into *problem investigation*, *treatment design* and *treatment validation*. This context of building and assessing an artifact composes the design cycle proposed by Wieringa. The design cycle is a subset of a larger cycle called the engineering cycle, which can be seen in Figure 1. In the thesis research, the treatment implementation phase will not be considered part of the project's scope.

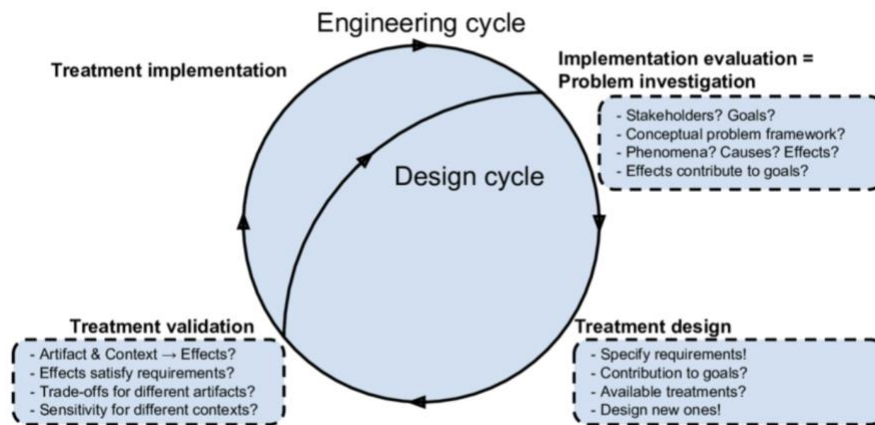


Figure 1: Wieringa Engineering/Design Cycle [adapted from (Wieringa, 2014)]

The *problem investigation* stage includes analyzing the context in which the problem lies, including the research problem, the identification of stakeholders, and their objectives. The requirements are narrowed down in the *treatment design*, drawing new insight that contributes to shaping the artifact's design. Subsequently, the *treatment validation* stage focuses on validating the treatment within the given context. This research will assess the effectiveness through qualitative methods (Wieringa, 2014).

This cycle closely relates to the structure of the thesis as it begins with identifying the concepts of DT and BPM and whether a relationship already exists. It helps define terminology and outline the problem space and potential directions for further research associated with SRQs 1 to 2. The next phase of the thesis will explore the different frameworks developed thus far and propose a new model that combines the relevant aspects that support the existent relationship. The criteria will be further identified by answering the third SRQ, while the framework will provide a conclusion to SRQ4. The later stage of the design cycle emphasizes the validation of the artifact in a specific context, which directly corresponds to SRQ5, as the proposed framework will be applied and evaluated in the context of an actual business process within an organization.

3.2 Research Questions versus Research Method

A visualization of each defined research question against the research method used to address it can be seen in Table 1 below. The research methods used include a literature review based on analyzing existing academic and non-academic (grey) literature to help establish a common understanding of the concepts and terminology used. The knowledge gained from SRQs 1 to 2 will be input for the latter questions. The research validation will be uncovered using expert interviews to help provide professional insight and explore the nuances of the research field and its applicability to the real world.

Research Question		Research Method		
		Literature Study	Case Study	Expert Interview
SRQ1	<i>What is the definition of digital transformation which will be used in this context?</i>	X		X
SRQ2	<i>What aspects of business process management are crucial for digital transformation maturity models?</i>	X		
SRQ3	<i>What are the demands of each maturity model used to describe the relationship between business process management and digital transformation?</i>	X		X
SRQ4	<i>How will the outcome model represent the relationship between digital transformation and business process management?</i>	X		X
SRQ5	<i>Is the proposed framework valid when applied to an engineering consultancy firm?</i>	X	X	X

Table 1: Research Methods Used per Research Question

3.3 Systematic Literature Review

3.3.1 Literature Study

The systematic literature review method, more specifically, a multivocal literature review, will be applied to conduct the research that aims to describe the relationship between DT and BPM. This type of review incorporates and considers multiple and possibly contradicting perspectives on a topic, often revealing academic research's complexity and multidimensionality. This method also incorporates grey literature to help support or refute claims (Garousi et al., 2019).

Grey literature is defined as “all levels...in print and electronic formats which are not controlled by commercial publishers” (Farace & Schöpfel, 2010). Depending on its credibility and retrievability, it is

classified according to three categories or tiers. For this research, the information found in grey literature will be validated with experts to verify its accuracy given the situational context.

3.3.1.1 Search Criteria

Finding current and relevant academic literature encompasses the initial search using Google Scholar using keywords that pertain to the research. This helped outline the existing knowledge and identify the societal gap and the need for further exploration of the topic of DT. Keywords that provided the citations for the research included “digital transformation” and “business process management.” Each concept was also paired with a “framework” or “model” to understand existing models' criteria and evolution better. With this foundation, the complexity of the succeeding versions becomes more apparent. Another strategy applied was to search for a pair of concepts to uncover existing associations and relationships identified in prior research. This helped provide a more focused directory of potential resources for future citations.

The outcome of the literature review revealed that different search queries related to the encompassing topic yielded similar results. Various keywords, including those that combined the DT and BPM concepts, were tried to see if anything new emerged. However, many irrelevant articles surfaced, or the searches often referred to the same studies, introducing a potential bias. This prompted a change in approach, focusing on the references of the found articles for more relevant information. No specific data was recorded on the number of hits per search term or how many articles remained after applying each inclusion criterion.

The benefit of inclusion criteria was that they helped establish a baseline for all incorporated references and provided another critical consideration of extracted information. The guidelines included:

- The article or book is written in the English language,
- The search terms appear in the title of the literature,
- There is no period restriction,
- The full text is available (including via university access).

The criteria for grey literature, which will be considered when looking for references, are the same as the ones for academic literature. The credibility and accuracy will be verified with academic sources for further measures. Information gathered from grey literature will be verified while conducting interviews with experts/professionals in the field to confirm whether this information aligns with their experience or personal interpretation of the terminology.

These criteria have been chosen to maintain the research's rigor and focus and provide meaningful insights. The lack of period restriction to encompass the evolution and development of research in the domain includes proof of its adaptability to technological advancements. Mentioning the terminology pertinent to the research ensures that relevant studies from other focuses are included. If a second search is necessary to deepen the knowledge of the research topic, stricter guidelines, such as a timeline, can be applied to produce higher-quality evidence.

3.3.2 Case Study

To strengthen the research conclusions and insights, the literature review will be combined with a case study to investigate a current challenge. This research approach helps clarify and understand a real-life problem in a predefined context.

Applying a case study will help provide initial feedback on the performance of the newly created framework and identify weaknesses. It will help evaluate the generalizability of the framework and reproducibility of another process or organization. Due to time constraints, this will be a single-use case research.

For the research, a business process within the organization will be explored in its everyday context to help understand and explain causal relationships or correlations (Crowe et al., 2011). This is essential in providing evidence for the effectiveness of the research and supporting the identification and exploration of the relationship between two factors using the new framework. The organizational process will be chosen based on its strategic value and impact on daily operations. This procedure must also be complex enough to demonstrate the organization's dynamics and problems. Another factor to examine is the availability of resources and documents to assure the viability of the study. The participants' demographics and roles will be described for contextual understanding and more tailored optimization recommendations. The availability of documentation on the business process can provide evidence for the internal knowledge transfer and tracing between participants.

3.3.3 Expert Interviews

Interviews will be conducted with experts in the research domain to support and validate the case study. In the research context, an expert will be classified into two categories depending on whether the individual has more than or less than five years of experience in the field. Further attributes of the anonymized individuals will be presented in a table when performing the interview analysis. These interviews can follow a structured, unstructured, or semi-structured format. Semi-structured questions are the most used format due to their adaptability in combining predefined and spontaneous questions guided by dialogue between the interviewer and interviewees. This flexibility allows for further clarification in some respects while simultaneously providing concrete enough responses where necessary (DiCicco-Bloom & Crabtree, 2006).

In the research context, the interviewees will include individuals exploring the mapping and evaluating the DT within the organization. These individuals have a more holistic overview of the initiative and theoretical knowledge about the domain. The individuals who influence or are impacted by the business process will be approached differently to validate their understanding of the defined process outlined by the organization and how they perceive it. Following the fundamentals, a more in-depth analysis can be conducted about the business process and the human influence over it.

3.4 Threats to Validity

Validity can be defined as the property of truth from a specific study rather than an overarching theory. It implies that these assumptions are valid in one context but not in others, regardless of whether the design and theory are identical (Findley et al., 2021).

3.4.1 Construct Validity

Construct validity concerns whether the measures in the research investigate the measures mentioned in the theory and to what degree. This is especially important in abstract concepts that cannot be easily observed or quantified (Strauss & Smith, 2009).

The main challenge of the research is the theoretical knowledge of DT stakeholders and how it is implemented in an organization. Having in-depth knowledge of the organization's and its employees' inner workings is pivotal to understanding the current situation and the possibilities for optimization. Thus introducing biases and misinterpretations that can be transferred to the newly created framework.

The qualitative approach poses another threat, as surveys and interviews are open to misinterpretation and potential inferences of statements. Another aspect to consider is the unclear definition or understanding of business processes within the organization and how they are carried out, which hinders the answers from professionals.

Precautions that will be applied to reduce the impact of these challenges in the research context include defining the concepts clearly and concisely so that every participant has the same background understanding of the context. Identify experts in the field and ask them to validate the analysis measurements of the framework based on previous experiments. Based on the input provided in the previous mitigation tactics, conducting a pilot study can help outline the feasibility of the research, yield the problematic aspects, and allow for the reconstruction of the approach.

3.4.2 Internal Validity

Internal validity describes the extent to which changes in the dependent variable are caused by the research's independent variable(s) rather than confounding variables. Confounding variables related to the independent and dependent variables lead to distorted conclusions about their relationship. Confounding variables vary from one study to another (Kaya, 2015).

To mitigate the risk of introducing a confounding variable, the created framework will be validated further before the case study is executed. This validation will be based on expert opinions and the available academic literature to validate the relevance and degree of truth of the uncovered relationship between DT and BPM.

An additional mitigation tactic to mitigate internal validity includes using standardized procedures when collecting data to minimize variation in results. Conducting a semi-structured interview and using preexisting documents from the organization produced before the research will provide a more holistic and accurate representation of the situation. Discussing the process and findings with professionals within the organization responsible for DTs or experts in the field can serve as additional validation of interpretation and understanding of the results. Based on the outcome, transparent data reporting will allow future researchers to replicate the research design or use it as a guideline for setting up a follow-up investigation.

3.4.3 External Validity

External validity focuses on whether conclusions from a specific study hold for a broader audience or other target populations. This distinction is made because generalizability considers inferences based on a sample from a defined population, whereas transportability concerns a sample and targets a whole population.

Previous research has yet to prove that internal validity is more important than external validity; therefore, ignoring external validity could lead to biased estimates (Findley et al., 2021).

Every organization falls at a different stage of its DT and may interpret the criteria differently based on previous understanding of the concept. Other factors, such as the maturity of business processes, also influence the research. The newly created framework and conclusions identified in the case study may be subject to change within another engineering consultancy firm. Therefore, although the research may provide valuable insights in one scenario, it is essential to consider the implications of directly translating this study into another context.

Mitigation tactics that can be utilized in future research include keeping extensive and detailed documentation of the research process, the organizational structure, and daily internal operations. This will help contextualize the applicability of this framework in various scenarios and identify the challenges and inconsistencies in results. Performing a comparative analysis with multiple case studies for similar business processes helps align the standardization across an organization. Even a comparison with a competitor can identify the differences in obligatory processes and inspire the evolution of maturity.

3.4.4 Reliability

Reliability is defined as the likelihood of attaining similar results each time the research in question is conducted. Inconsistent test results can lead to fluctuating and dependable data, which poses a challenge when drawing meaningful conclusions (Fitzner, 2007).

DT implementation is context- and time-specific, making replicating identical conditions across organizations challenging. Nuances among people, business processes, and dynamics can highly impact reproducibility. Qualitative analysis poses a challenge in consistency and subjectivity with the introduction of human interpretation. Technological advancements can make research outdated due to its contextual relevance. With human influence and digital advancements, reliability is difficult to control.

Considering the mentioned threats, mitigations of process standardization of qualitative research together with semi-structured interviews to minimize data variation. Defining terminology with clear and concise language to help establish a unanimous background will help avoid ambiguity and room for interpretation. Including these tactics, the research findings can become more credible.

Validity and reliability in research ensure the accurate representation of real-world phenomena. Reducing bias helps eliminate the distortion of concluding statements and understanding of the concepts. Given these skeptic and misinformation challenges, public faith in scientific research can be maintained to guide data-driven decision-making.

4 RELATED LITERATURE

4.1 Digitization, Digitalization, and DT

The concept of DT has no widely recognized definition, as the dictionary definition is insufficient when referring to scientific research. This is significant as it poses a challenge to develop a consistent and specific theory and test the relationship between DT elements while contributing to existing research. From an organizational perspective, this hinders the claim of responsibility for implementing DT within the organization. The intricacy of the concept makes it more challenging to perform an accurate and reliable assessment amid continuous change in other companies and industries (Gong & Ribiere, 2021).

DT is used interchangeably with similar terms of *digitization* and *digitalization*; however, it is crucial to understand the differences before delving into DT. The definition of digitization depends on the context, the most important being the “transformation from analog to digital” (Schallmo & Williams, 2018). This may include artifacts or business processes. Organizations such as Cisco or Gartner have defined this concept with a greater focus on “the connection of people, processes, data and things” with the “goal...to create and deliver new value to customers” (Schallmo & Williams, 2018). The various perspectives are apparent from a theoretical academic mind instead of the more organizational mindset focusing on the end customer and value creation (Schallmo & Williams, 2018).

Digitalization describes digital technologies and how they help optimize and transform business tasks as part of a more extensive process. It creates customer value with better coordination between processes and focuses on cost reduction and customer experience (Verhoef et al., 2021).

By identifying the differentiation between digitization and digitalization, the concept of DT can be more holistically described. Table 2 outlines the various definitions proposed by researchers.

Author(s)	Definition
(Schallmo & Williams, 2018)	“A sustainable, company-level transformation via revised or newly created business operations and business models achieved through value-added digitization initiatives, ultimately resulting in improved profitability.”
(Baslyman, 2022)	“The utilization of disruptive technologies to transform business digitally that is, to optimize provided services and products, sustain economic growth, and enhance the user experience.”
(Gong & Ribiere, 2021)	“A fundamental change process, enabled by the innovative use of digital technologies accompanied by the strategic leverage of key resources and capabilities, aiming to radically improve an entity and redefine its value proposition for its stakeholders.”
(Teichert, 2019)	“An evolutionary process that leverages digital capabilities and technologies to enable business models, operational processes and customer experiences to create value.”

Table 2: Definitions of Digital Transformation

Establishing a unified definition is essential to establish consistency and clarity for researchers. With a single source of truth, it is easier to track the evolution of findings and simplify the communication of what

has been found previously (Gong & Ribiere, 2021). For the thesis, combining the above definitions will help formulate a new definition that better conforms to the field and scope of research. The critical overlap between the defined concept of DT includes utilizing technologies, business model focus, strategic alignment, user experience, and value creation. These common factors align with the objectives of DT initiatives (Loonam et al., 2018). DT in the context of this research will be defined as:

“Digital transformation is a strategic and sustainable initiative concerned with redesigning business and operational models. It entails creating value and enhancing user experience by leveraging digital technologies, key resources and capabilities.”

This concept definition will serve as the foundation for SRQ1; based on the outcome of the expert interviews and the case study, the definition will be further refined and written in a later section of the thesis document. The newly composed definition combines the overlapping aspects to more wholistically encapsulate the essence of DT. The definition proposed by Teichert needs to include the human factor. In contrast, the proposed definition by Schallmo & Williams needs to mention value creation, which is often the driving factor for an organization. Each of the definitions discussed above requires a pivotal component added. The “redesign of business and operational model” is essential to link to the BPM and optimize organizational tasks. As organizations continually grow and innovate, a sustainable solution is vital to help propel and support the DT initiative. Just as essential are the people responsible for implementing this, as well as their knowledge and influence on the business processes.

The proposed definition will be validated throughout the research's validation stage through interviews with professionals and experts in the field. This will strengthen the accuracy and comprehensiveness of the contribution to research in the research domain.

4.1.1 Types of Digital Transformations

The DTs can be classified into four categories, as no one-size-fits-all framework exists. Every organization has distinct business goals and a unique composition; therefore, management should ensure that they choose the best-fitting one. Each type will be named and outlined in further detail below.

4.1.1.1 Process Transformation

This type of technology is concerned with using technology within a company to streamline and make internal processes more efficient by reducing resources (time, money, labor) (*4 Types of Digital Transformation - Digital Directions*, n.d.). Reevaluating the company's current setup is the area of focus for it to be considered a successful transformation. Introducing new software should be carefully assessed along with change management, timelines, and urgency, as this may bring on more long-lasting challenges rather than sustainable improvements (St-Jean, 2022).

4.1.1.2 Business Model Transformation

The transformation type examines how an organization can offer and position value delivery in a unique way (*4 Types of Digital Transformation—Digital Directions*, n.d.). This is distinct from a process transformation, as business models encompass reexamining the fundamentals of the business rather than segmented features (Várkonyi, 2022). The main threat to implementation is high ambitions and a lack of in-house skill set (St-Jean, 2022).

4.1.1.3 Domain Transformation

Domain transformation is highly connected to an organization’s new market ambitions. Driving factors for this transformation include maintaining market position, diversifying the organization’s portfolio, or continuing current business (St-Jean, 2022). It focuses on using the existing customer base and building from the current momentum (Várkonyi, 2022).

4.1.1.4 Cultural/Organizational Transformation

The most challenging transformation involves a shift in mindset and procedural change across all levels of employees, with a top-bottom approach (St-Jean, 2022). This change is necessary when shifting goals and practices to embrace digital innovation and decentralized decision-making (*4 Types of Digital Transformation - Digital Directions*, n.d.).

Based on the classification of DTs, Table 3 accordingly maps the concepts of digitization, digitalization, and digital transformation.

	Digitization	Digitalization	Digital Transformation
Process Transformation		X	
Business Model transformation			X
Domain Transformation		X	X
Cultural/Organizational Transformation			X

Table 3: Types of Digital Transformations

Process transformation is strictly concerned with process optimization, as the name suggests, and domain transformation is focused on exploring new customer markets. Therefore, both are strictly about process optimization in a specific context rather than a holistic approach. DT encompasses business model transformation, domain transformation, and cultural organization, as the newly created definition emphasizes. Business models must be examined because the business processes must fit the technology so that new technology will resolve the challenges faced on a more deep-rooted level. The people involved are another pivotal aspect of the transformation, as with a common goal and understanding of the initiative, the activities become more complex and mundane. The inferences made visualized in the table will be validated in expert interviews.

Based on the classification of DTs, each one focuses on a different aspect of an organization, with some putting more emphasis on the human factor while others on the business processes; however, these are isolated parts that need to be optimized rather than gaining a more holistic overview of all elements.

Improvement is about incremental changes that may have repercussions on other aspects. However, solely fixating on a single part may be detrimental to the broader perspective due to a lack of context and lead to poor decision-making. DT is intended to be a more comprehensive approach to change. In contrast, the classification of different “types” appears to be more of a breakdown of various phases or stages of change that must take place for an impact to be felt.

4.1.1.5 Business Process Reengineering

Research may conclude that DT and business process reengineering (BPR) have similar characteristics. However, BPR focuses on rule-based process automation and streamlining. In contrast, DT focuses on data collection and using this knowledge to make a data-driven, strategic reimagining of the broader change (Schallmo & Williams, 2018). While BPR is specific to business processes, DT is a more comprehensive organizational initiative for more holistic changes to drive innovation within various aspects of the business, encompassing BPR but not limited to this scope.

The various types of DT will not be investigated in depth within the scope of this thesis. Instead, they are included to provide background information and to illustrate that the perception of DT varies depending on the perspective of different stakeholders.

4.1.2 DT Maturity Models

With the rapidly evolving digital landscape and organizations continually seeking innovation and maintaining market position, various DT models have been introduced to outline a roadmap for successful integration.

McKinsey’s research has composed the six building blocks they expect to “deliver annual growth and cost efficiencies of 5 to 10 percent or more in the next three to five years” (*Raising Your Digital Quotient* / McKinsey, n.d.). These six blocks, which include strategy and innovation, the customer decision journey, process automation, organization, technology, and data and analytics, can be seen in Figure 2 below.



Figure 2: McKinsey Six Building Blocks [sourced from (*Six Building Blocks for Creating a High-Performing Digital Enterprise* / McKinsey, n.d.)]

Although not all need to be developed and utilized to the same degree, they are established as a foundation that provides a high-level, holistic overview for large-scale digital initiatives. *Strategy and Innovation* refer to the forward vision for the upcoming three to five years rather than using historical data. This also refers to focusing on the pain points to exploit several opportunities to have a breakthrough and model and adjust the business model accordingly. *Customer Decision Journey* refers to fully comprehending customer behavior and desires to adapt products, services, and marketing materials successfully. *Process Automation* explores the initial investment to support future scaling initiatives. Automation is less about digitization but rather a greater focus on process optimization. The *organization* assesses its agility and collaboration capabilities and measures key performance indicators (KPIs), focusing on customer experience while maintaining the company's ultimate vision. *Technology* dives into legacy systems and the need for technology to drive innovation and automation. The two-speed Information Technology (IT) model improves customer-facing programs while optimizing core systems and data management. *Data Analytics* involves collecting and analyzing customer analytics to determine whether they contribute to business goals. Although each building block is a crucial point, the more excellent value is derived from the integration and interdependence for high-scale digital implementations (*Six Building Blocks for Creating a High-Performing Digital Enterprise | McKinsey, n.d.*).

Although the building blocks are a foundation for a successful, digitally capable organization, some limitations can be outlined. This model refers to interdependent components that develop digital capabilities. However, it is relatively rigid, and each building block needs a balance or spectrum to plot the organization.

The following model is intended to guide stakeholders and provide a checklist for implementing a DT on an organizational level. One prerequisite is a well-established and defined purpose to stimulate and drive change. This maturity model and its respective phases can be seen in Figure 3 below.

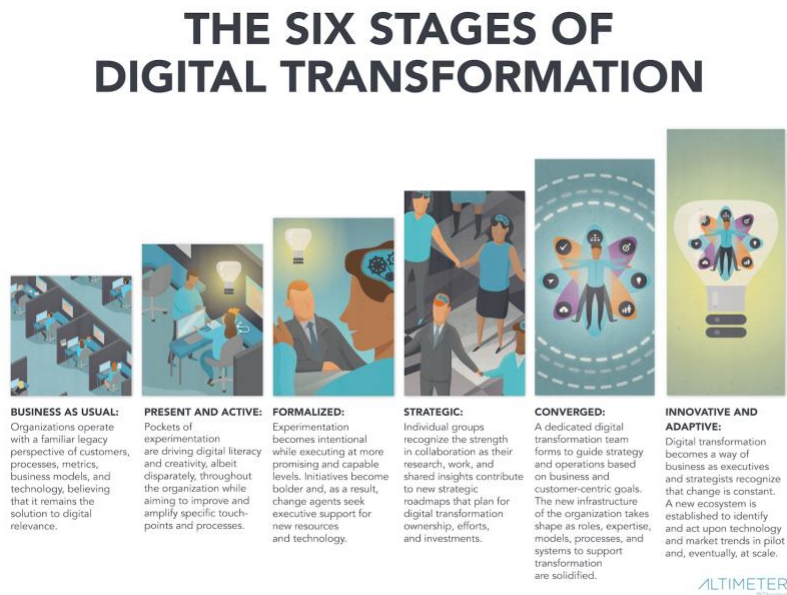


Figure 3: Six Stages of Digital Transformation [sourced from (Solis, 2016)]

Business as Usual refers to the traditional organizational operations, with the occasional manual process and minimal digital technology reliance. Digitization needs more focus and is driven by an immediate need rather than a long-term benefit. In the *Present and Active*, digital technology initiatives are initiated across teams; however, there needs to be a cohesive strategy but there is a growing awareness and benefits of optimization and efficiency. *Formalized* explores the realization that higher management and employees across the organization have embraced the positive effects of DT and composed a DT strategy emphasizing integration and data-driven decisions. There is a lingering feeling of resistance to change despite the small efforts on a departmental level. In the *Strategic* phase, DT has integrated as a company strategy and aligned with the business goals. Interdepartmental collaboration has been initiated to increase customer value and metrics are closely monitored to track performance. The most pivotal stage of DT is *Converged* as digital implementation and resource allocation are prioritized. The organization is operating in a digital ecosystem while remaining agile and adaptable. The last, *Innovate and Adaptive*, explores the sustainability of the solution and the continuous optimization by embracing change with the incorporation of organizational culture (Do, 2023; Solis, 2016).

This model approaches DT holistically, including a mind shift. However, it is a linear, rigid approach where an organization must belong to a single phase at any moment. This makes for an inflexible approach and a more in-depth knowledge and understanding of the model.

As DT is an evolutionary process, monitoring digital maturity and identifying areas for improvement are essential. The Digital Maturity Matrix (DMM), as seen in Figure 4, divides this concept into two axes, including digital intensity and transformation management intensity (Cichosz et al., 2020).

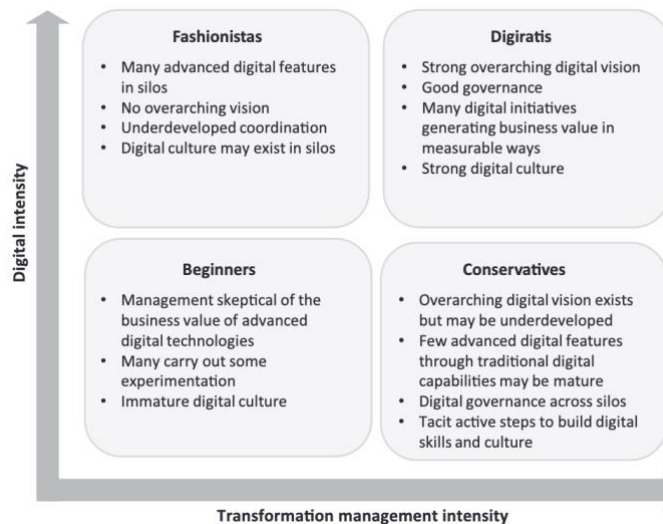


Figure 4: Digital Maturity Matrix [sourced from (Cichosz et al., 2020)]

The *Beginners* minimally utilize digital capabilities, whereas the *Fashionistas* experiment with digital tools, but they may need to be more compatible to raise more significant challenges. These organizations wish to implement a DT strategy; however, they need the proper knowledge and a roadmap on how to proceed. Moving along the x-axis, the *Conservatives* are knowledgeable of the benefits of digital

innovation but are reserved and skeptical of trends that could result in a missed opportunity. In the top right of the matrix lies the *Digiratis*, which can balance the vision for change and investment for opportunities by developing a holistic but feasible DT strategy (Ciruskabiri & Varnaseri, 2023).

Although the matrix visualization helps visualize the correlation between the two axes, the criteria that describe each quadrant could be more specific and complete, making it easier to map an organization with prior knowledge and supporting documentation or context.

Inspiration will be drawn from existing models and the specific criteria required to achieve various maturity levels; however, only some people have a good foundation; therefore, a combination is necessary. This new model's overall look and structure will be based on the quadrant model, as illustrated in Figure 4, which was identified as the most suitable framework. This approach ensures that the criteria for each level apply to both DT and BPM. Adopting the quadrant model will provide an organization's maturity, facilitating a clearer understanding of its current position and the future steps toward higher levels.

4.2 BPM

The field of BPM unites various perspectives and provides a single language for technically savvy and business-oriented stakeholders. It is a “body of principles, methods, and tools to design, analyze, execute, and monitor business processes” (Dumas et al., 2018). Although models and measures are used to evaluate such processes, the foundation still lies in the science of BPM, which uses a systematic approach.

A BPM initiative aims to deliver sustainable process optimization while delivering value to customers. When applying BPM, an organization begins with process identification and pinpointing the operational problem. A cycle was proposed to help guide organizations, as seen in Figure 5.

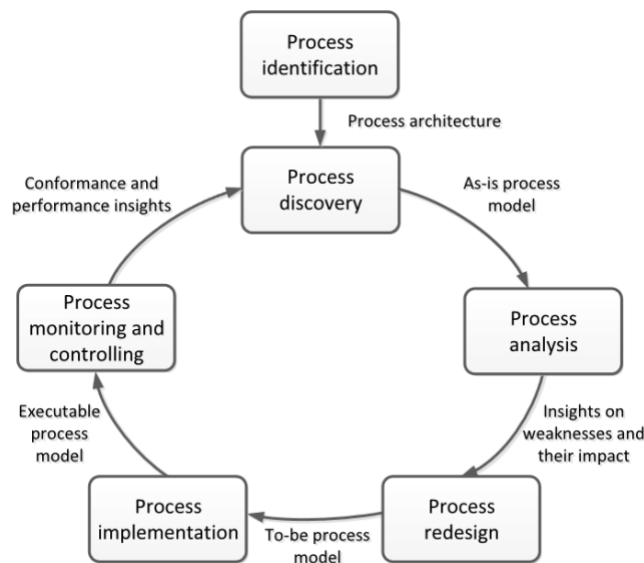


Figure 5: The BPM Cycle [sourced from (Dumas et al., 2018)]

BPM is an incentive for organizational excellence and efficiency, and the digital era created a need for business responsiveness due to the dynamic environment. Digitalizing BPM is also a requirement for implementing the DT. However, this cannot be achieved with existing frameworks and guidelines, as social cooperation is needed (Kir & Erdogan, 2021).

Agility is a mindset that requires an entity to adapt to the changing environmental factors, with organizations facing this challenge around strategic planning and its hindrance to innovation and growth (Benner, 2009). Adaptive Process Management (APM) is a new perspective on BPM with a more in-depth focus on organizations and their capability of responsiveness to changing business environments. Where BPM relies on more rigid and predefined processes, APM emphasizes rapid changes and retrospectives on real-time threats and market conditions. Critical features in APM include dynamic process modeling, collaborative approach, continuous improvement, data-driven decision making and automation (David, 2023).

With organizations facing higher pressure to be customer-centric while achieving peak efficiency, APM offers a guideline to ease the transition by adopting new digital technologies while maintaining the essence of business activities and achieving sustainable results. BPM is the catalyst for DT by outlining the methodologies and tools to streamline and optimize processes while contributing to the overall organizational agility and innovation ambitions.

4.2.1 BPM Maturity Models

Maturity models serve as tools for organizations to evaluate and optimize business processes. By progressing through the different levels, organizations can achieve higher performance and greater operational efficiency (Röglinger et al., 2012).

The Business Process Maturity Model (BPMM) originated to help identify weaknesses and standardize and optimize business processes based on organizational applications and requirements. The principles of BPMM focus on analyzing processes from the organizational goal perspective and the sustainability of the tasks. It is based on the groundwork that the previous stage is used as the foundation for a later stage. The visualization of the model can be seen in Figure 6 below.

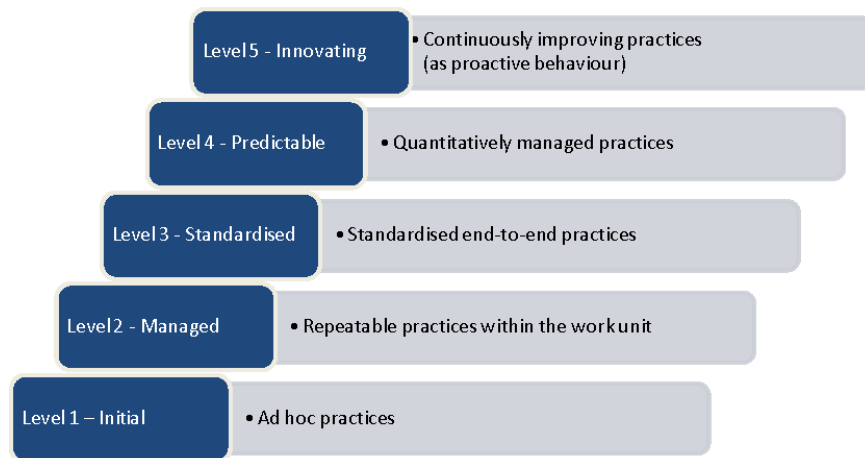


Figure 6: BPMM Stages [sourced from (Looy et al., n.d.)]

The *Initial* level is focused on achieving growth by supporting people in their daily challenges and task completion. In the *Managed* phase, the focus shifts towards establishing reproducible processes and minimizing rework by managing work execution. *Standardization* investigates the standardization of processes and monitoring of KPIs based on performance. The *Predictable* level is about stability, knowledge management, and predictable outcomes based on organizational operations. The last level of *Innovation* is achieved when continuous efforts toward efficiency and creativity help organizations remain competitive.

This model's drawbacks include its simplicity and linear approach, which do not allow for agility and unique organizational requirements. It focuses on well-established organizations with access to resources and expertise (Bridges, n.d.).

Another alternative model to measure BPM maturity is the Gartner BPM Maturity and Adoption model, which distinguishes six distinct phases, as shown in Figure 7.

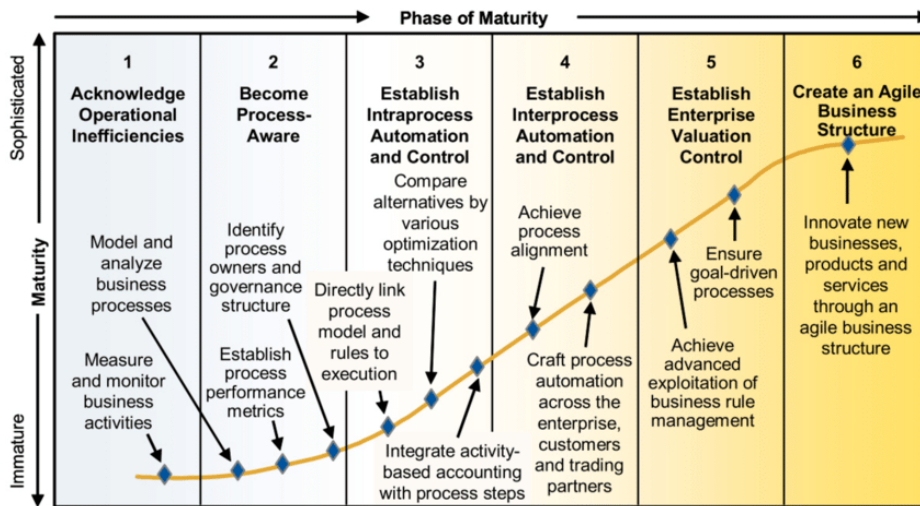


Figure 7: Gartner's BPM Maturity and Adoption Model [sourced from (Matkovic et al., 2017)]

The model indicates the path an organization takes to achieve BPM maturity. Phase 1 evaluates the business opportunities but only requires a partial roadmap of how to achieve these goals. The second phase is where the organization goes through the operational changes after proceeding to phase three, where some processes are being automated. Phase four begins when internal and external partner processes are integrated. The fifth phase creates the relationship between organizational changes and process execution. Completing these five phases is the foundation for the last and final phase of creating an agile business structure. Along with this maturity process are the organizational characteristics that need to be considered: organizational behavior, resources, governance, methods and techniques and technology (Matkovic et al., 2017).

Gartner's model is a widely used tool for identifying strengths and weaknesses. Nonetheless, this model is relatively rigid, and organizations may be unable to pinpoint their current phase. It also places a strong

emphasis on technology and overlooks human influence. The devised model offers valuable insights but neglects the impact of external dynamics and applicability across business contexts.

Like the BPMM model, the Capability Maturity Model Integration (CMMI) is a set of guidelines that helps optimize processes and systems (Van Looy et al., 2013). It was designed to develop and maintain product and service quality in the context of software and system engineering. It assesses and outlines business capabilities and guides organizations in achieving higher maturity levels, ranging from one to five, as seen in Figure 8.

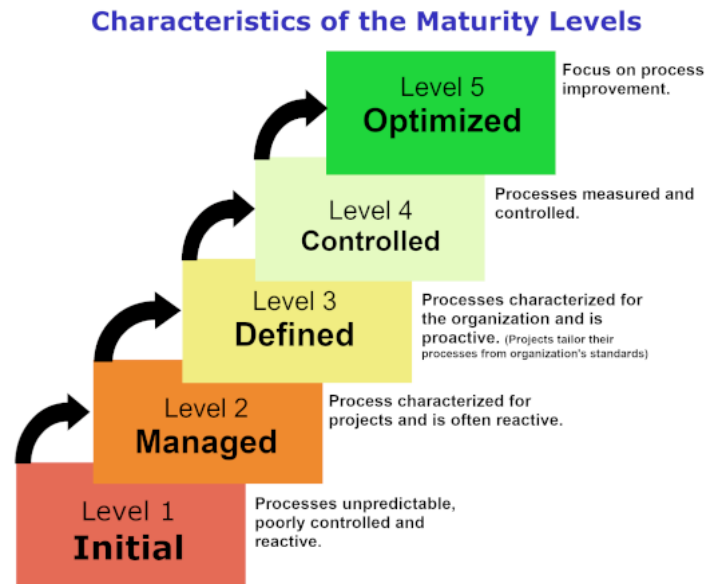


Figure 8: CMMI Levels [sourced from (CMMI-Level III Experienced | Imagine Believe Realize, LLC, n.d.)]

The five maturity levels start with the *Initial*, in which unpredictable, chaotic processes lack consistent management. There needs to be more team collaboration and process standardization. The second level (*Managed*) project management processes and metrics are introduced to help track resources, timelines and functionality development. During the *Defined* level, processes are defined and standardized with a shift in perspective from an individual to a collaborative effort. The *Controlled* level refers to quantitative performance analysis using historical data and measuring appropriate KPIs to control variability. In the final level of *Optimized*, organizations focus on continuous improvement and innovation to sustain the implementation (White, 2021).

CMMI is not a one-size-fits-all solution that needs to be tailored to the organizational situation and business vision. This model is highly focused on documentation and internal processes and needs to provide a customer-centric approach. Another challenge is that no industry-specific solution exists; therefore, the customization may need more context and domain restrictions.

The conclusion about the CMMI model is that while it provides a robust framework for assessing and improving process maturity within organizations, it has limitations when directly applied to the context of DT. As DT encompasses process optimization, technological innovation, and cultural shifts, the model

must be adapted or integrated with additional frameworks to address this broader dimension of technological innovation. Therefore, while valuable, more than the CMMI model is needed to guide organizations comprehensively through the complexities.

4.3 Combination

In the digital era, the relationship between DT and BPM emerges as the key to an organization's success and market position (Fischer et al., 2020). Combining the two initiatives into a new model aims to propose and explore the hypothesized relationship between these domains. This integrated model seeks to identify and outline the specific criteria that must be met to classify an organization at various maturity levels. As the levels progress, more advanced criteria will be used, including embedded digital culture, continuous innovation, and alignment of business processes with strategic goals and market changes. Organizations can effectively assess their DT and BPM maturity by fulfilling these criteria, ensuring a comprehensive approach to achieving a sustainable competitive advantage.

4.3.1 DT and BPM

A DT can be implemented to reshape how an organization delivers value while optimizing or changing the existing business model with the help of new technologies. For the success of a DT, it is pivotal for organizations to digitize, integrate and analyze business processes to streamline the end-to-end process visibility and enhance the customer experience. Introducing DT will stimulate a more innovative and continuous improvement perspective about potential opportunities and maintain market position. With the BPM integration, organizations can better monitor performance and adjust the roadmap accordingly (Stjepić et al., 2020).

4.4 Future Framework

With the lack of available academic research describing the relationship between DT and BPM, this research aims to visualize the correlation between the maturity level of business processes and the phases of DT implementation. The framework will add a novel perspective to visualize the correlation between DT and BPM. It will not only enrich the academic community in exploring the concept of DT but also serve as a guideline for organizational implementation within a given context. The combination will result in a quadrant model with axes representing DT and BPM ranging from low to high maturity. The basis of the choice is rooted in the representation of a dual axis with the introduction of dimensionality and elimination of linearity from previous models. The framework will provide how these two concepts are balanced. In each quadrant, the necessary criteria for maturity that need to be fulfilled will be included for a more concrete positioning, thus providing strategic oversight on achieving the highest maturity level in both aspects of BPM and DT.

4.5 Digital Transformation Capability Maturity Model

For this research, the Digital Transformation Capability Maturity Matrix (DTCMM) will use a DT's maturity levels and the components corresponding to each level. This provides an overview of the current level and the steps needed to advance. The visual representation of the model can be seen in Figure 9.

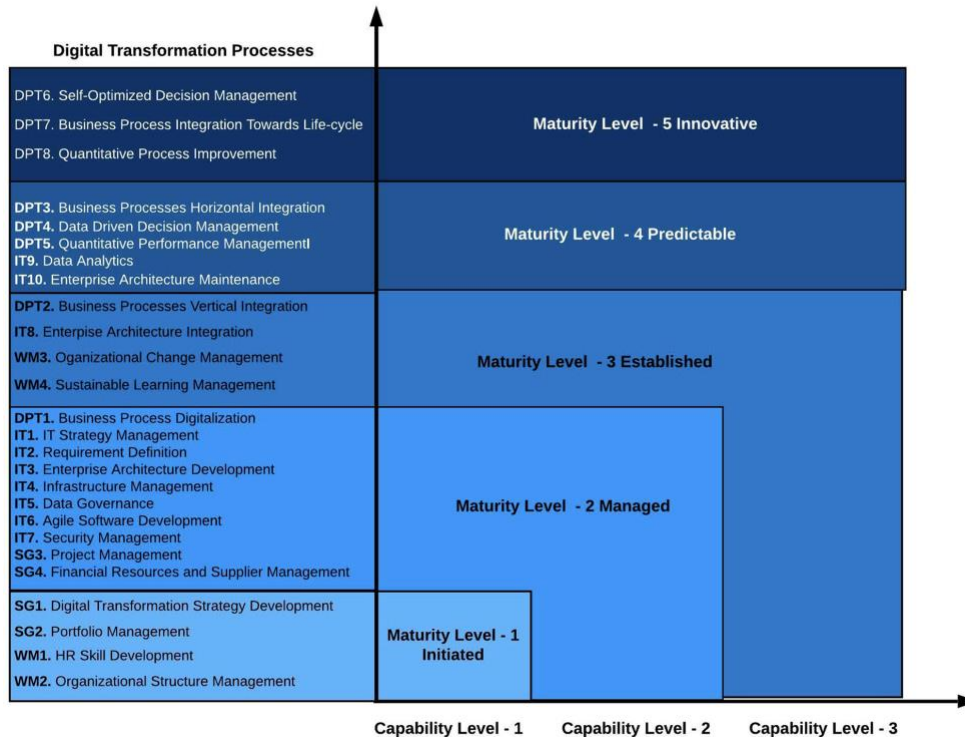


Figure 9: Digital Transformation Capability Maturity Model [sourced from (Gökalp & Martinez, 2022)]

The model will help establish a common understanding of the various maturity levels and serve as a guideline and reference point for the expert interviews. Although the DTCMM can appear extensive, it is advantageous to break down the criteria to ensure subtleties and avoid misconceptions. During the interviews, this model will be demonstrated to validate or refute the assumptions of the organization's present level of DT and to act as a guide for progressing to the subsequent level.

This model will be shown to indicate and confirm or deny the assumption for the current level of DT of the organization and serve as a roadmap for advancing to the next level.

The approach may appear effective but needs to account for maturity's complexity and nonlinearity. Many businesses meet one or more criteria throughout various levels but must designate a single maturity level at any time. As a result, the model needs more flexibility and customization to deliver valuable insights into an organization's development.

5 FRAMEWORK CONCEPTUALIZING

Based on the previously discussed models, several shortcomings have been identified that could be improved to enhance their usability and usefulness. Per the literature on already existing models for DT and BPM, an initial framework was created to consider the limitations of previous research and eliminate ambiguity. The criteria used while designing the new framework included exploring the phases of a DT implementation, maturity models of BPM and various visual representation methods. As discussed, BPM models followed a linear transition from one stage to another; none were considered for at least the framework. The structure and the visual representation of the quadrant model inspiration were born from Figure 4, with each axis representing the factors ranging from low to high maturity to better visualize the correlation. Initially, the decision was made to use high and low maturity as the primary measurements, as this approach aligns with how previous research typically defined these concepts during the development of models. The axes are interchangeable, with no significant rationale for placing one factor on one axis versus the other. This would allow DT and BPM to be evaluated on a separate axis and then, based on that information and the cross-over, understand the dependencies and overlap of necessary criteria to be fulfilled. No numbered stages or levels were indicated for either concept due to the vast variation among researchers and what they deem appropriate. The colors used in the framework are directly aligned with the organization's brand guidelines to enhance familiarity and recognition among the interviewees. This method was adopted to gather feedback and identify weaknesses within the current model. The goal was to build a quick proof of concept.

In the initial scope, the research intended to include a checklist of criteria that must be met in each area; however, due to time constraints and the difficulty of quantifying the necessary level of fulfillment at each stage, the research will focus on the "ideal" scenario of DT and BPM being at the highest maturity. For this, a checklist was devised to outline the criteria that must be met to be considered in the dark blue quadrant, as shown in Figure 10.

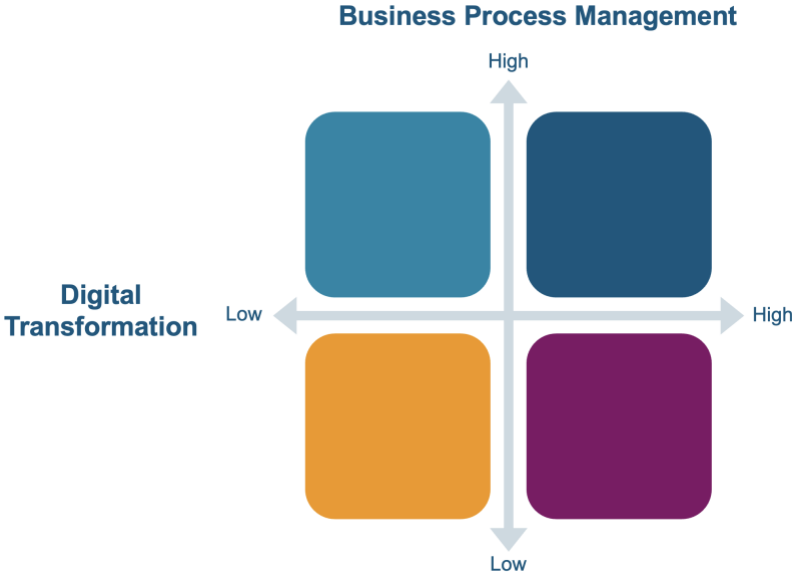


Figure 10: Initial Proposed Framework

The checklist of items required to evaluate an organization in the "ideal" scenario was developed based on overlapping criteria identified in the literature review outlined in 3.3. These criteria outline the necessary components for BPM and DT to be considered at the highest level of maturity. Items that only pertained to either BPM or DT were carefully considered but ultimately excluded, as the research focuses on exploring the relationship between these two factors and their correlation. These checklist items were added as a supplement to the model to provide further comprehension of the model's complexity. The dark blue quadrant indicates the following items are in place:

- ✓ A clear vision and strategy are in place before the implementation
- ✓ Leadership actively supports the implementation
- ✓ Business processes are well documented in a structured, clear manner to ensure reproducibility
- ✓ Ownership is established for each step within a process
- ✓ Business processes are compliant with regulatory requirements, industry standards, and internal policies
- ✓ Established KPIs are used to measure performance and drive decisions
- ✓ Culture of continuous agile improvement and scalability

According to existing research, this itemization includes items that must exist for a DT or BPM to be considered at a high maturity. With the creation of the initial framework, a presentation was delivered in front of classmates and academic experts in the field. Based on the feedback following the presentation, each item was prioritized to help provide a starting point for the checklist. A tangible artifact was attached to each item. This iterative process ensured the checklist was comprehensive, practical, and grounded in expert insights and real-world applicability.

On a conceptual level of the framework, the concerns that were brought up were with the dimensions of the quadrants below the DT axis (x-axis), the meaning of the scale of low to high for DT maturity, and most importantly, the practicality of the framework. Suggestions were to conduct interviews of subject matter experts not employed by the organization where the study is taking place, ensuring that employees support the initiative and including a matrix of potential interviewees to establish a precise demographic.

Based on the comments addressed in the initial concept, another iteration of the model was created to strengthen arguments and remove inconsistencies and misconceptions. The visual representation is shown in Figure 11.

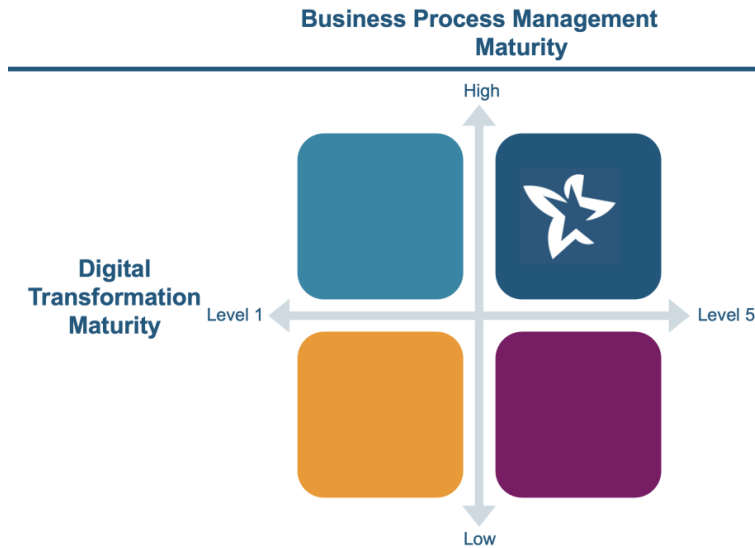


Figure 11: Second Iteration of Proposed Framework

The notable changes include clarifying DT maturity levels per Figure 9. Thus, it now consists of the scale used in that model and reflects the various stages and the necessary components that should be present. One thing to note is that the DTCMM (Figure 9) consists of five distinct levels; however, in the model proposed in Figure 11, there are two sides, allowing for some interpretation regarding the incorporation of level three. It is challenging to divide the model into upper and lower quadrants. One option is to leave it as is, allowing organizations to be plotted along the axis rather than contained within a specific quadrant. Alternatively, splitting level three down the middle could be considered. However, this would need a more logical basis for determining which criteria belong in each half and further divided into the quadrants. The assumption applied in this research is that only levels four and five will be included in the upper or right-hand quadrant, respectively.

In evaluating the validity of every quadrant, it is essential to recognize the inherent challenges and implications of different maturity levels. Maturity in these frameworks is considered positive, with higher levels typically representing better performance. However, the detailed properties of DT and BPM mean that progression along these axes is nuanced and context-dependent. Every quadrant is valid, as organizations can fall into any category without realizing it until a thorough evaluation is conducted. Being in a specific quadrant is not inherently harmful; instead, it should serve as a stimulus for improvement aligned with internal strategies. The context and the company's goals dictate the desirability of a particular quadrant.

Each quadrant has its strengths and weaknesses; for instance, moving from level one to level two may be relatively easy due to the many improvements available. However, advancing from level four to level five is resource-intensive, requiring significant effort to perfect minor details. Achieving high DT maturity with low BPM maturity is generally unlikely, as effective DT relies on well-managed and optimized business processes. Low BPM maturity, characterized by informal, undocumented processes and a reactive approach, hinders the integration of digital tools and efficient data management, both crucial for high DT maturity. Conversely, having high BPM maturity while maintaining low DT maturity is feasible and can

yield significant organizational insights. High BPM maturity, marked by standardized processes, continuous improvement, and data-driven decision-making, indicates optimized internal processes, even if advanced digital technologies are not fully integrated.

The organization's logo indicates the ideal scenario to provide familiarity and a visual reference to the interviewees. The checklist is now presented in a tabular format with a coinciding artifact of a tangible deliverable following the completion of each item.

The artifacts were not part of any existing maturity models discussed in the literature review in Chapter 4; however, based on feedback from domain experts, they were included to enhance accountability, ensuring that companies complete each item. These artifacts serve as supplementary proof of the model's validity and can be used to assess organizational progress, improving the organization's transparency and communication.

In Table 4, the items are prioritized based on a top-down approach, starting with a high-level overview and making each subsequent item more concrete.

Priority	Item	Artifact(s)
1	✓ A clear vision and strategy are in place prior to the implementation	- Vision statement - Strategic objective
2	✓ Leadership actively supports the implementation	- Stakeholder engagement plan
3	✓ Business processes are compliant with regulatory requirements, industry standards, and internal policies	- Mapping of process to standard - Compliance status
4	✓ Business processes are well documented in a structured, clear manner to ensure reproducibility	- Process flowcharts - Standard Operating Procedures
5	✓ Ownership is established for each step within a process	- RACI Matrix
6	✓ Established KPIs are used to measure performance and drive decisions	- Power BI dashboards with success metrics
7	✓ Culture of continuous agile improvement and scalability	- Retrospective meeting reports

Table 4: Improved Checklist and Corresponding Artifact(s) Related to the Ideal Scenario of the Proposed Framework

6 INTERVIEWS

The research findings will be validated through a case study using semi-structured interviews. As mentioned, this interviewing approach allows for more flexibility and in-depth exploration of the participant's answers. It will enable the interviewer to maintain a focus on the presented topic while still being able to ask for clarification on responses.

With the organization's guidance, key stakeholders were identified to provide a list of employees who have enough domain knowledge and would be willing to participate in this research. Due to the nonessential nature of identifying specific individuals, the names have been omitted to protect the privacy, confidentiality of opinions, and equal opportunity to express their perspectives.

As shown in Figure 12, the initial grouping of these individuals would be those with exclusive knowledge of DT, BPM, and the project-specific risk assessment module within the system. Knowledge of the risk assessment module specified in an organization context is included as a separate domain because that is the business process where the framework's validation will be performed. Based on the provided list of names, most employees were involved in more than one area, contrary to initial belief. This approach, however, proved beneficial as it offered a more complex and comprehensive overview of the knowledge base and personal bias on the DT initiatives within the company and their application to a business process.

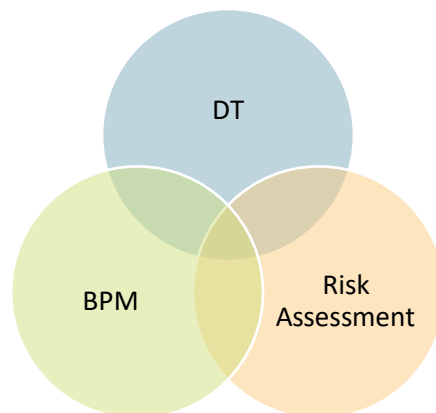


Figure 12: Areas of Domain Expertise

With the finalized list of participants selected based on their line of work and scheduling availability, an invite with some background information about the research was sent out to ensure their willingness to participate and some expectations.

Participant ID	Role in Company	Years of Experience in the Company
Participant 1	Associate Director in Project and Consultancy	Almost 24 years
Participant 2	Functional role for Project Management Processes and Applications	8 years
Participant 3	Corporate Director for Operational Excellence and Risk Management	5 months
Participant 4	Project Excellence Manager in Maritime and Water	More than 15 years
Participant 5	Risk Assessment Manager for Project Proposals	More than 30 years
Participant 6	Project Excellence Advisor	Almost 5 years
Participant 7	Enterprise Architecture Manager	15 years
Participant 8	Digital Lead for Climate Resilience	Over 6 years
Participant 9	Project and Technical Excellence Director for Southern Africa	30 years

Table 5: Participant Demographics

From there, the structure of the interview questions and the models that serve as the foundation for the research were shared upfront. The outline of the interview questions can be seen in further detail in Appendix A - Interview Questions. This is an explicit choice to ensure time efficiency and maintain focus on critical issues by reducing misunderstandings. While providing context or information may be helpful for participants to be more prepared with their answers, a drawback of this approach is the ability to tailor their responses in a favorable outcome toward the research, therefore skewing results. Considering the repercussions, sharing the questions was a deliberate choice to manage expectations and allow for preparation or additional input that was not previously considered.

Furthermore, the visuals and models are difficult to apply at a singular glance, decreasing efficiency and equal opportunity to answer to the best of their ability. Despite their area of expertise, they shared all questions with everyone to provide inclusivity for people who may have experience in a previously unknown field.

Research Question	Interview Question
<p>SRQ1: What is the definition of digital transformation which will be used in this context?</p>	<ul style="list-style-type: none"> - Are you familiar with the company initiative of a digital transformation? - What is your previous experience with digital transformations? - Please define the concept of a digital transformation in your own words/what are key concepts or words that come to mind when hearing “digital transformation” - Do you agree with the following definition? <ul style="list-style-type: none"> o <i>“Digital transformation is a strategic and sustainable initiative, concerned with the redesign of business and operational models. It entails creating value and enhancing user experience by leveraging digital technologies, key resources and capabilities.”</i> - What words or group of words stuck out to you in this definition? Is there any part that you do not agree with?
<p>SRQ2: What aspects of business process management are crucial for digital transformation maturity models?</p>	<ul style="list-style-type: none"> - What is your level of knowledge of business process management (maturity models)?
<p>SRQ3: What are the demands of each model used to describe the relationship between business process management and digital transformation?</p>	<ul style="list-style-type: none"> - For this research, the DT maturity model will be used. It is a combination of a capability maturity model and a digital transformation model. Are you familiar with this model? Have you seen it before? - Based on the models and the criteria that need to be covered to be at a certain level, I would identify RHDHV as at level 3. Please share your thoughts on this.
<p>SRQ4: How will the outcome model represent the relationship between digital transformation and business process management?</p>	<ul style="list-style-type: none"> - Considering only the ideal scenario, indicated by the RHDHV logo in the top right-hand corner, do you think that the checklist with the corresponding artifacts is complete? Do you think the language used is clear? - (What is your opinion on the top-down versus bottom-up approach?)

<p>SRQ5: Is the proposed framework valid when applied to an engineering consultancy firm?</p>	<ul style="list-style-type: none"> - Where would you place the risk assessment process on this model? - What do you think needs to be changed to the current process to change the placement? - How are you impacted by the risk assessment business process?
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Table 6: Interview Questions Linked to Research Questions

In Table 6, the correlation between SRQs and the interview questions helps describe the aim of the interviews and how they relate to the research focus. As the research is centered around DT and its ordinary meaning across experts, it was crucial to ask these individuals about their viewpoints on the topic and help validate the newly created definition and whether it encompasses all the necessary elements. Sharing the new definition before the interview may have influenced their answers but also allowed for sufficient time to help form their opinions on what the concept means to them. The nuances between the interviewees and their suggestions for clarifying the language used will be discussed in the next chapter. With BPM being the subtopic of the research, establishing the level of knowledge of the topic helped establish the expertise level, which, in turn, the credibility of these individuals. Having a shared understanding of both concepts, introducing models and visuals made it easier to relate them in a real-life context with more concrete requirements and expectations through visual aids. Different variations of these models are circulating the academic domain; therefore, this also helped focus the discussion on the specifics of the DT maturity levels defined in this specific model. Stating the level at which RHDHV is presumed to be according to the model served as guidance for the conversation and demonstrated the knowledge based on personal experiences. Furthermore, stating something rather than asking a question invites further engagement, leading to a more dynamic conversation with opportunities for feedback about broader experiences or differing opinions. Leaving the reasoning as an open-ended question allows the interviewee to uncover personal experiences that could have been limited based on predetermined criteria.

Based on existing models and considering the drawbacks and strengths, the new framework was devised to visualize findings and hypotheses. The checklist, which corresponded to the ideal scenario and the framework, was presented during the interview, along with some background information to ensure everything was understood. Following the provided context, participants were asked to validate the prioritized item list, the corresponding artifact and the language used. With the following input, a question regarding the placement of RHDHV according to those predefined boundaries. Rather than placing a marker on the model, the conscious choice of the colored quadrant was made to understand a more high-level overview better. This is due to the need to cover identified, applicable criteria and scales.

With the creation of the framework, a case study was conducted to identify the validity of the model in the organizational context for a relatively standardized process and its adaptation within RHDHV. These questions were directed only toward individuals functionally or technically impacted by the risk assessment module within the company. The questions about observing the process should have been

included in the irrelevant section and focused on the optimization and improvement ideas on reaching simultaneously high levels of BPM and DT maturity.

7 RESULTS

7.1 Interview Response Analysis

This chapter explores the qualitative data collected through in-depth semi-structured interviews with the previously identified participants. These interviews aimed to capture the nuanced perspectives and experiences regarding their overall awareness and engagement of the DT initiatives and their application within the organization.

RHDHV has a company-wide “refined strategic framework...to ensure that it connects to [their] purpose, [their] people and [their] clients’ needs.” It builds on the purpose of Enhancing Society Together and serves as the focus (Reporting, n.d.). Two participants identified the Stronger25 vision as the leading vision of the organization and conducted work that then “[fed] into the strategic objectives” (Participant 2, personal communication, April 30, 2024). As a previous effort, RHDHV encouraged the Digital Ways of Working (DWO) participation for which two of the participants were at the forefront of this initiative as there were “enthusiastic groups of developing specific tools that could be used ... but it was not something that was adopted by the vast majority of people in the company” (Participant 6, personal communication, May 2, 2024). Due to the downfall, the initiative was abandoned.

7.2 DT

While there is a general awareness of the organizational DT initiative, involvement levels differ among individuals, with some even confusing the concept with mere digitization. DT encompasses various facets essential for improving how organizations operate more holistically, with participants 1 and 2 confirming the hypothesis that there is no “one size fits all solution.” Participants throughout the interviews shared their opinions about the key phrases or concepts that they associate the DT initiative with, including the “document-driven way of working” (Participant 1, personal communication, April 30, 2024) where “nothing is done by hand” (Participant 6, personal communication, May 2, 2024) by taking out the “mundane aspect of what we do” (Participant 4, personal communication, May 2, 2024) and how to “leverage off of the digital technologies” (Participant 9, personal communication, May 21, 2024) to optimize daily operations. These participants believe this is what DT entails; however, this is more closely related to the concept of digitization, as described in 4.1.

Another perspective on the DT initiative is viewing it as a “project, [with] a very specific goal” (Participant 6, personal communication, May 2, 2024) and the “value in the way we work and the way we deliver our products to our client” (Participant 2, personal communication, May 1, 2024). Considering external and internal aspects for DT is essential as “we grow in our maturity; we need to help the clients as well in [the] growth of maturity” (Participant 7, personal communication, May 8, 2024). Contrary to the statements made by the participants in the interviews, for this thesis, DT is considered an ongoing initiative that takes an iterative approach to organizational improvement rather than a series of short-term projects, as these goals may become obsolete.

Lastly, the rest of the participants’ impression of DT and what it entails focuses more on collecting, analyzing, and utilizing data between corporate applications. This would benefit better accessibility, enhance cultural collaboration, and stimulate further innovation (Participant 7, personal communication,

May 2, 2024, Participant 7, personal communication, May 8, 2024, May 2, 2024, Participant 8, personal communication, May 8, 2024). By leveraging historical data, the organization can automate and standardize processes; however, the difficulty lies in “learning from each other and being as modular as possible.” (Participant 8, personal communication, May 8, 2024). This standardization should be introduced as a prerequisite before introducing digital technologies, as mentioned by Participant 2, as an organization “need[s] to tailor [their] way of working to be able to leverage off of the digital technologies and ... make use of them.” This statement directly correlates to the previously mentioned argument that no one-size-fits-all approach exists.

7.2.1 People, Process, Technology

The participants kept referring to the concept within the interviews as the people, process, and technology pillars. The primary issue is not the technology itself (Participant 1, personal communication, April 30, 2024); instead, “just starting with technology is not going to give [the organization] that sustainability that your digital transformation definition spoke about” (Participant 2, personal communication, April 30, 2024). Trust must be built, and the rationale behind changes must be communicated through all levels of employees (Participant 1, personal communication, April 30, 2024). As proposed by Participant 2, data emerges as a fourth crucial pillar, complementing the triad of people, processes, and technology. While technology may drive processes, it cannot inherently engage people, and processes alone may not drive technological adoption (Participant 2, personal communication, April 30, 2024). For a robust future, it is essential to align people, processes, and technology (Participant 3, personal communication, May 1, 2024). There is often a gap in users' ability to effectively utilize “the technology [provided as] ...the people are not quite familiar how to use it (Participant 5, personal communication, May 2, 2024).

One drawback is that proper data analysis is needed to help guide future improvements. Technology should form the foundation, emphasizing people adopting tools (Participant 6, personal communication, May 2, 2024). This ties into a shared opinion that the people, process, and technology approach can be robust if applied in the listed order and builds the most sustainable and balanced organization while utilizing individuals' strengths. Furthermore, this is also in line with the definition of DT derived and validated throughout the interviews.

According to Participant 6, the organizational data is detached, with no coherent reporting or consolidation, leading to “fall[ing] behind and not be[ing] competitive anymore in the future” if new opportunities are not embraced. Ultimately, the success of these initiatives hinges on how appealing and relatable they are presented to the employees carrying out the work.

Overall, there was at least a baseline understanding of the approach to a DT initiative. While some confusion existed between DT and digitization, there was general agreement with the proposed definition, with minor remarks incorporated into an improved definition, which will be further described later. Participants acknowledged and confirmed the hypothesis that there is no one-size-fits-all approach; instead, DT should be tailored to the organization, its structure, and its end goals. The consensus emphasized the "people, process, technology" approach, which is how RHDHV employees are typically educated on the subject. There was agreement that technology should not be the leading factor; instead,

the transformation should start with the human factor. Only by prioritizing people will there be substantial progression towards further maturity.

7.3 DTCMM Levels

The following results are derived from interview responses to assess where the organization currently stands within the DTCMM levels. These levels provide a structured framework to evaluate an organization's DT journey, from initial stages of digital awareness to advanced stages of digital integration and innovation. The participants from various departments provided insights into their experiences, and their responses offered a comprehensive view of the organization's maturity, as shown in Table 7, identifying gaps and suggesting areas for future improvement.

	P1	P2	P3	P4	P5	P6	P7	P8	P9
Level 1	X								
Level 2		X	X	X		X	X		X
Level 3					X			X	
Level 4									
Level 5									

Table 7: Level of RHDHV Maturity Indicated by Interview Participants According to the DTCMM Levels

RHDHV, as an overarching organization, is perceived to fall at a specific level within the DTCMM for several reasons. One participant indicated that the organization falls at level 1, as “there's not an aligned maturity level through all groups, [s]o you will see some groups that are frontrunners.” (Participant 1, personal communication, April 30, 2024)

Two participants agreed that the organization falls under level 3 because the different business lines “have found a similar way of working” (Participant 8, personal communication, May 8, 2024), and therefore, the “horizontal integration that is still missing” (Participant 5, personal communication, May 2, 2024). This is a positive outlook that there is still room to grow.

Most participants have indicated that RHDHV would be considered at level 2 for several reasons. Firstly, there is a need to identify and “grip with the enabling factors, which [are] your standards, your guidelines, your processes [a]nd that's where your [Integrated Management System] (IMS) comes into play,” which is driving BPM maturity but indicates that the organization is not yet ready for a true DT (Participant 2, personal communication, April 30, 2024). The Enterprise Architecture (EA) is not fully established, further underscoring this point. There is a significant desire for “everybody [to be] unique, and they need to do everything differently rather than seeing that.” (Participant 4, personal communication, May 2, 2024), resulting in varied approaches to similar tasks. A general resistance to standardization and repetition contributes to the lack of standardized processes and procedures. This resistance has also led to challenges in implementing specific software, as vendors have deemed the organization’s “maturity level was not high enough yet” (Participant 9, personal communication, May 21, 2024). Different parts of the organization require varying levels of support, and the “support and the impact that comes from senior management is often found lacking.” There is also a need for an authoritative figure to establish rules and make decisions, as currently, no one is willing to take on this responsibility (Participant 9, personal

communication, May 21, 2024). Although the organization is during integration and change management efforts to move toward Level 3, these efforts are still incomplete and remain at Level 2.

7.4 Quadrant Model Assessment

This section will analyze participants' evaluations concerning the organization's position within the new quadrant model. Specifically, it will outline the company's chosen quadrant color and delve into the risk assessment module, examining participants' insights into the organization's challenges as it progresses. This analysis offers a comprehensive understanding of the current state by capturing these perspectives and providing valuable guidance for future strategic initiatives.

7.4.1 Framework

Participants provided various suggestions for enhancing the quadrant model to reflect and support the correlation between DT and BPM maturity levels. One recommendation was in addition to the “clear strategy [to] developing a good roadmap” to guide progression through the checklist (Participant 1, personal communication, April 30, 2024). Adding organizational culture as a critical third step was also suggested, addressing its current absence (Participant 2, personal communication, April 30, 2024). Changing the wording in step 5, from *ownership* to *governance*, was proposed to better and more clearly capture the intended personal accountability and “give them ... certain role mandates” (Participant 3, personal communication, May 1, 2024; Participant 6, personal communication, May 2, 2024). The stakeholder plan should also include a communication plan, ensuring the clear and compelling spread of information throughout the organization. Based on this, leadership development should more actively involve employees, supported by the available knowledge groups and training programs. Due to the international nature of most organizations, recognizing the diversity of operational contexts, the model should accommodate country-specific environments (Participant 3, personal communication, May 1, 2024). To provide a more explicit depiction of coverage, “almost like you'd have to color this up like red, amber, green” to indicate the extent to which aspects are addressed was recommended for a more transparent indication of the current situation (Participant 4, personal communication, May 2, 2024). Including individualism in the checklist was suggested to ensure it is accounted for, potentially linking it to the cultural component (Participant 4, personal communication, May 2, 2024). To enhance logical correlations, measuring BPM by “defin[ing] a five-level stage” was recommended between the two axes of the quadrant model (Participant 7, personal communication, May 8, 2024). Finally, including the “tooling to support the activity in itself” would provide practical guidance and support implementation (Participant 7, personal communication, May 8, 2024). These suggestions aim to make the quadrant model more comprehensive and adaptable to the organization’s needs and context.

7.4.2 RHDHV

Participants identified the company's current quadrant color as predominantly orange, highlighting several key insights, as shown in Figure 13. A notable point of discussion was the contrast between top-down and bottom-up approaches. While some participants praised the top-down method (Participant 5, personal communication, May 2, 2024), combining both approaches was suggested to enhance organizational processes and ensure higher adoption rates (Participant 2, personal communication, April 30, 2024; Participant 3, personal communication, May 1, 2024). This can be achieved with top-down to

encompass more operational elements. At the same time, “certain processes within discipline-specific areas, I think that needs to be informed bottom up.” (Participant 2, personal communication, April 30, 2024). This blend is crucial for delivering value to the organization and its clients (Participant 7, personal communication, May 8, 2024). Establishing a solid foundation before advancing is essential (Participant 4, personal communication, May 2, 2024), as the organization is “not that high when it comes to [DT]” (Participant 6, personal communication, May 2, 2024). There is a desire to be more process-minded, emphasizing finding a cultural balance and improving prioritization (Participant 7, personal communication, May 8, 2024). Although the IMS project marks a beginning, BPM maturity has not been fully achieved, and no unified goal drives the organization (Participant 9, personal communication, May 21, 2024). Leadership must be decisive and not fragmented, with clear guidance and cohesive direction across business lines.

Additionally, one participant chose light blue, noting that while BPM knowledge is mature from a functional perspective, integration still needs to be completed. The organization uses data-driven analysis, but it is “in a low and an early stage of that,” and several crucial steps are missing.

Another participant selected purple, emphasizing the need to give Key Performance Indicators (KPIs) more meaning. There is a lack of recognition for well-executed projects and a need for more innovation rather than “get stuck in your old ways of working.” Ensuring that developments are necessary and meaningful is also highlighted, along with balancing innovation with individual excellence (Participant 8, personal communication, May 8, 2024).

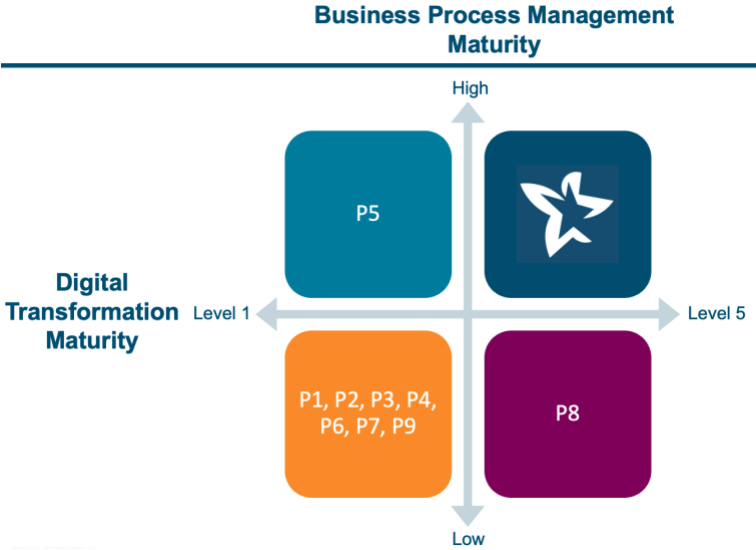


Figure 13: Placement of RHDHV According to Participant on the Quadrant Model

Based on the overall placement of the organization and the interviews conducted with the employees, it is confirmed that all the quadrants are valid and relevant for the assessment. As discussed, the organization uses numerous disjointed technologies that do not share data, making it difficult to draw valuable conclusions. In addition, the business processes are unclearly defined and executed inconsistently, creating a lot of waste. This is not necessarily a bad placement within the model; however,

it is important to conduct these evaluations periodically and ensure the findings are communicated clearly rather than having a misconstrued view of reality. At least most interviewees in this stakeholder group agree excluding the occasional outlier, which is to be expected. When DT and BPM maturity are addressed, RHDHV can devise a plan to achieve higher efficiency and performance.

7.4.3 Risk Assessment Module

Opinions regarding the risk management module's positioning inside the quadrant model were varied among those impacted by it. While the module has established fundamental risk assessment processes, some participants pointed out that it still lacks the integration and consistency required for higher degrees of maturity. Others pointed out that the module's effectiveness could be improved by varying levels of adoption and understanding among different teams. Overall, these insights indicate that the risk management module is a critical area for improvement to ensure comprehensive and complete risk mitigation strategies across the organization.

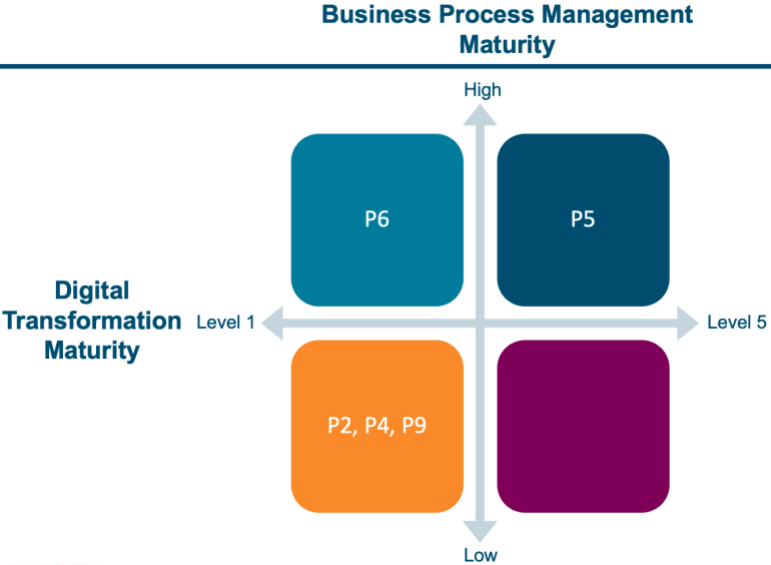


Figure 14: Placement of RHDHV’s Risk Assessment Module According to Participant on the Quadrant Model

As seen in Figure 14, participants who evaluated the risk management module and placed it in the orange quadrant noted several fundamental issues. One remark pointed out that the process is not clearly defined, resulting in a “vast difference in ... completeness, like content-wise, and a “lack [of] knowledge and capabilities in terms of risk management.” (Participant 2, personal communication, April 30, 2024) Poor risk management practices and being stuck at step two in the checklist highlight a significant lack from the operational perspective, with risk assessments performed often only at the proposal stage. Participant 4 agreed with the placement in the orange quadrant, pointing out that while there is a well-defined process, it is “subject to interpretation.” There is a significant lack of in-house knowledge regarding risk assessments and tooling. The tooling is financially driven, with complex terminology paired with a not user-friendly interface and inadequate guidance. There is a need to focus on specific project risks based on prepopulated fields rather than solely on broader business risks. (Participant 4, personal

communication, May 2, 2024; Participant 9, personal communication, May 21, 2024) The participants suggested that the entire process requires redesigning from the foundation to be more effective.

On the other hand, Participant 5 categorized the risk assessment module as dark blue, acknowledging that while the standards are high and the module is highly digitized, it suffers from a lack of detail and performing it “at the last moment.” To improve engagement, there is a need for more user-friendly and accessible tools, which is something that is echoed by Participant 4. Additionally, the organization is missing critical steps 6 and 7 of the proposed checklist, indicating a gap in the comprehensive application of the module. Project Managers (PMs) do not perform optimally due to a lack of process knowledge and insufficient guidance.

Based on the experience and knowledge, Participant 6 placed the module in the light blue quadrant. They emphasized the need for “more appealing tooling for the risk assessment [that] would improve the quality.” There is a widespread lack of education on using the risk management module effectively, with many employees showing little interest in engaging with the process.

These insights collectively highlight that if an organization is identified as belonging to the orange quadrant, significant improvements in clarity, user education, and technological support are needed to enhance the risk management module's effectiveness across the organization.

7.4.4 Change Management and Culture

During the interviews, participants frequently highlighted culture and change management as significant challenges to the organization's DT efforts. They outlined the pivotal role of culture in shaping attitudes towards change, noting that the existing cultural dynamics often affect decision-making and standardization. Change management, mainly through the Awareness, Desire, Knowledge, Ability and Reinforcement (ADKAR) framework, was identified as insufficient, with gaps in communication, leadership, and employee engagement. These insights reveal that addressing cultural and change management issues is essential for driving successful transformation and achieving higher levels of organizational maturity.

Participants highlighted the need to challenge people and encourage risk-taking, proposing scalable solutions that foster mutual learning (Participant 1, personal communication, April 30, 2024). Open communication with employees is essential, as is crafting a “strong story” that resonates with the incoming generation and the current demographic, ensuring that messages are convincing (Participant 4, personal communication, May 2, 2024). The importance of explaining the benefits to individuals is stressed, as is advocating for a “communication plan through all phases of your process to be successful in terms of having acceptance and adoption” (Participant 4, personal communication, May 2, 2024). High autonomy within the company complicates the adoption of standardized processes, pointing to a lack of effective change management and driving forces (Participant 8, personal communication, May 8, 2024; Participant 9, personal communication, May 21, 2024).

Cultural factors play a significant role in shaping the organization's approach to change. While culture should not limit creativity, it must support change management efforts as the organization “cannot just sell a strategy to a client” (Participant 1, personal communication, April 30, 2024; Participant 2, personal

communication, April 30, 2024). Cultural transformation is a gradual process, requiring time and incremental steps to adjust (Participant 3, personal communication, May 1, 2024). The organization currently fights resistance to standardization and an excess of freedom, hindering efforts to implement sustainable change (Participant 3, personal communication, May 1, 2024; Participant 4, personal communication, May 2, 2024). Balancing the preservation of individualism and “multiple ways of working [the organization must] define the best way to get the best result” for moving forward while enforcing structure and boundaries (Participant 7, personal communication, May 8, 2024; Participant 9, personal communication, May 21, 2024). Culture is a significant component that drives and constrains the organization's ability to advance its change management initiatives.

Adding culture as a checklist item would not add value, as it should be considered an additional factor as a new axis rather than a simple checklist inclusion. As discussed, addressing culture is significantly more complex and requires a more nuanced approach to integrate it into the model effectively.

8 DISCUSSION

8.1 Limitations

Despite the comprehensive research carried out throughout the thesis project, several limitations can be acknowledged to hinder its robustness.

When conducting the systematic literature review described in Section 3.3, it was noted that stricter guidelines could be applied due to the nature of the results. However, considering the topic's novelty, these stringent criteria still needed to be implemented, as a broader approach was more beneficial for developing a comprehensive definition of DT. This strategy also helped to identify and analyze various maturity model iterations, allowing for a detailed understanding of how the concept of DT was integrated and evolved across different stages. Additionally, it provided insights into the terminology used and the visual representations adopted in these models, contributing significantly to the framework's development.

This study encompasses the DT initiative, which is often considered a long process divided into several parts with incremental milestones and goals. It comprises multiple organizational changes, including technology, processes, and business approaches, which are iterative. Due to this extensive process requiring time, flexibility, and strategic management, measuring the full impact is difficult.

A factor explored in the related literature but not included in the scope of the research is organizational culture and its impact on adaptation, innovation, and effective execution of new strategies. This confounding variable could help further explain and support the relationship between DT and BPM. Along with culture, change management is another influential element that can affect the degree of adaptation as it helps as a framework to manage the human side of the transformation and its delivery of benefits in a sustainable manner.

On the validation aspect of the research, the results gathered and, therefore, the conclusions drawn can be difficult to generalize due to the scope being limited to one company with people in similar roles, thus similar exposure and a limited point of view. If time permits, it would be beneficial to include internal and external stakeholders to present a more comprehensive overview of the situation and gather more quantitative data. Even including subject matter experts outside the organization would provide some more theoretical background.

Geographic location is of utmost importance for this research, as placing RHDHV in a less developed country with fewer resources while maintaining the same culture and organizational structure would yield different results due to a more limited mindset on achieving sustainable results.

8.2 Future Work

This research scope can be broadened in the subsequent iterations to address some of the previously mentioned limitations. As culture was mentioned in every interview, expanding the framework to incorporate this third factor into the new framework would be interesting. Culture is difficult to pinpoint

and can be controversial; however, it is essential to bring awareness and acknowledge its effect on DT initiatives.

As various definitions of DT circulate in the research domain and there is no consensus, it is crucial to keep adapting the concept's meaning to improve communication and ensure relevance. As knowledge and context evolve, the definitions must reflect these changes.

A more in-depth direction in which this research could be expanded is conducting a comprehensive meta-analysis of DT models to compare the evolution of research and identify redundancy and potential obsolete models. This could yield a more fitting model to improve or expand the new framework based on previously overlooked insights.

The current focus on exploring the project risk assessment module within RHDHV proves to be a relatively standardized yet niche process within the organization, which experiences its limitations. In future research, it would be interesting to examine how this framework would withhold in a different context, such as another organization-wide process, a more diverse key user group, or a somewhat different organization with a similar process or a different sized organization.

9 CONCLUSION

The research sought to determine whether a correlation exists between BPM and DT maturity. A framework was created and validated through two stages: academic review and practical application. However, interviews revealed that certain aspects had yet to be considered, indicating that while the research is incomplete, it provides a solid foundation for further exploration. This study marks a significant starting point, highlighting the need for ongoing refinement and validation to entirely understand and leverage the relationship.

9.1 Research Questions

This section will address the sub-research questions and how they guided the thesis assignment and built the main research question, providing detailed analysis and insights based on the collected data. The chapter outlines the essential findings and implications for DT and BPM maturity by systematically exploring these questions.

9.1.1 SRQ1: What is the definition of digital transformation that will be used in this context?

As discussed in section 4.1, a universally accepted formal academic definition of DT must be. A new definition was developed and initially validated by fellow students and supervisors. This definition was subsequently presented to the interview participants within the organization, introducing some bias due to its specific application within RHDHV. While stakeholders provided valuable insights, the definition of digitization could have been more explicit, rendering some feedback unreliable due to a lack of domain knowledge. Concerns about "redesigning business and operational models" suggested that the focus should be on digital technologies rather than a fundamental perspective change. Additionally, it was recommended that the definition be reworded to include influences of the external environment and internal disruptions. The revised definition is as follows:

"Digital transformation is a strategic and sustainable initiative focused on reassessing business and operational models by considering external and internal factors. It involves creating value and enhancing user experience by effectively using digital technologies, key resources, and capabilities."

This rewording emphasizes that business models may be reviewed without necessarily being redesigned.

9.1.2 SRQ2: What aspects of business process management are crucial for digital transformation maturity models?

The lack of knowledge within the organization has led to unreliable answers regarding BPM. Internally, BPM is often called business process mapping, but at least this terminology is consistently understood among employees. This internal understanding is crucial as DT is linked to reevaluating operational and business models, which are directly connected to business processes and their interrelationships. How BPM is set up significantly affects the generated data and, consequently, the subsequent analysis. Maturity models utilizing a five-level scale can be employed to assess better and improve BPM practices. These models help identify the current level of BPM maturity and provide a roadmap for advancing through higher levels of process efficiency and effectiveness.

Based on the collected insights, the BPM level must be prioritized as it is the foundation for DT initiatives. Without well-defined and documented business processes supported by effective governance, introducing new technology can lead to setbacks and increased resistance due to the lack of rules. Establishing a BPM framework provides a foundation for stable and optimized processes, better aligns strategic goals, and clarifies the starting point. Streamlined processes are more straightforward to optimize, and organizations with robust business processes are assumed to have already undergone change management, facilitating easier risk management and mitigation plans.

9.1.3 SRQ3: What are the demands of each maturity model used to describe the relationship between business process management and digital transformation?

Currently, no models explicitly describe the relationship between BPM and DT. Existing models for BPM and DT are discussed separately in sections 4.1.2 and 4.2.1, each with its limitations. These limitations must be considered when developing new iterations of the proposed quadrant model. Despite these challenges, overlapping demands from BPM and DT can help identify and support their interrelationship. Furthermore, integrating change management and cultural aspects is essential in bridging the gap between these concepts, as both elements are critical in ensuring the successful implementation and adoption of new processes and technologies.

9.1.4 SRQ4: How will the outcome model represent the relationship between digital transformation and business process management?

The proposed quadrant model features two maturity axes, one DT and the other for BPM, each rated from level one to five, as seen in Figure 15 below. This adjustment was made to enhance consistency across the levels of measurement per axis based on feedback suggestions. These levels do not draw inspiration from a concrete model discussed previously but rather for further consistency. The progression and development of this model are detailed in Chapter 5 and Section 7.4.1. An accompanying checklist for each step's "ideal" scenario and artifact, emphasizing best practices and benchmarks. The choice of omitting the completion scale at this research stage was made due to the necessity of further investigation with validation of the results. This is not possible within the timeframe. Another deliberate decision was to exclude the technology for each checklist item due to organizational preferences and feedback from participants who advocate for the people-process-technology methodology, believing that technology should not be the leading factor. This approach ensures the model remains focused on aligning processes and people to drive transformation.

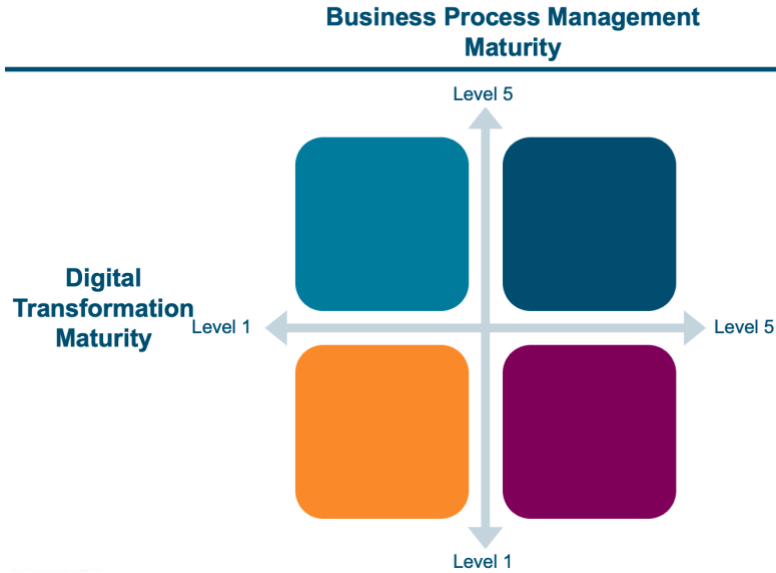


Figure 15: Last Iteration of the Proposed Framework

Priority	Item	Artifact(s)
1	✓ A clear vision and strategy are in place prior to the implementation	- Vision statement - Strategic objective
2	✓ Leadership actively supports the implementation	- Communication plan - Stakeholder engagement plan
3	✓ Business processes are compliant with regulatory requirements, industry standards, and internal policies	- Mapping of process to standard - Compliance status
4	✓ Business processes are well documented in a structured, clear manner to ensure reproducibility	- Process flowcharts - Standard Operating Procedures
5	✓ Governance is established for each step within a process	- RACI Matrix
6	✓ Established KPIs are used to measure performance and drive decisions	- Power BI dashboards with success metrics
7	✓ Culture of continuous agile improvement and scalability	- Retrospective meeting reports

Table 8: Last Iteration of the Checklist

9.1.5 SRQ5: Is the proposed framework valid when applied to an engineering consultancy firm?

The proposed framework proved ambiguous and needed clarification of the risk assessment process, explicitly concerning project-related risks within the proposal management process. While the framework holds potential for application across various processes within the company, the terminology must be tailored to align with company-specific jargon. The framework must be more concrete to ensure effectiveness and encompass a broader stakeholder group. Addressing these issues can better integrate the framework into the organization's operations and provide more explicit guidance on managing risks and improving existing processes.

9.1.6 MRQ: How can organizations assess their business process management maturity to support their level of digital transformation with a focus on the risk assessment process?

Organizations can leverage the quadrant model as a starting point accompanied by a checklist for achieving the ideal scenario in their DT and BPM initiatives. To effectively utilize this model, it's crucial to predefine the maturity levels for both axes using company-specific terminology, ensuring alignment with organizational goals and objectives. A vital step in this process involves conducting a thorough self-assessment with critical stakeholders through interviews, allowing for an evaluation of current capabilities and areas for improvement. Based on the assessment findings, organizations can devise a strategic plan outlining improvement points and initiatives, gather managerial support, and effectively communicate the strategy, stimulating alignment and commitment to advancing maturity levels.

10 PROJECT PLANNING

The thesis spans eight months. Specific timelines must be achieved each month with a centralized theme and goal to ensure timely completion. These are outlined in Figure 16 below.



Figure 16: Milestone Planning

Interim meetings and drafts are not considered when creating this plan. The important deadlines to note are February 16th, 2024, for submitting the long proposal, and June 28th, 2024, for finalizing the thesis document. These dates are set so that the thesis assignment is on schedule.

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APPENDICES

Appendix A - Interview Questions

- *Demographics:* Name (Will be anonymized in the transcript), Position within the company, and years working at the company
- *Exposure:* Are you familiar with the company's digital transformation initiative?
- What is your previous experience with digital transformations?
- Please define the concept of a digital transformation in your own words/what are key concepts or words that come to mind when hearing “digital transformation”
- *Standard Ground:* Do you agree with the following definition?
 - o “Digital transformation is a strategic and sustainable initiative, concerned with the redesign of business and operational models. It entails creating value and enhancing user experience by leveraging digital technologies, key resources and capabilities.”
 - o What words or group of words stuck out to you in this definition? Is there any part that you do not agree with?
- *Digital Transformation Maturity Model:* This research will use the DT maturity model, which is a combination of a capability maturity model and a digital transformation model. Are you familiar with this model? Have you seen it before?

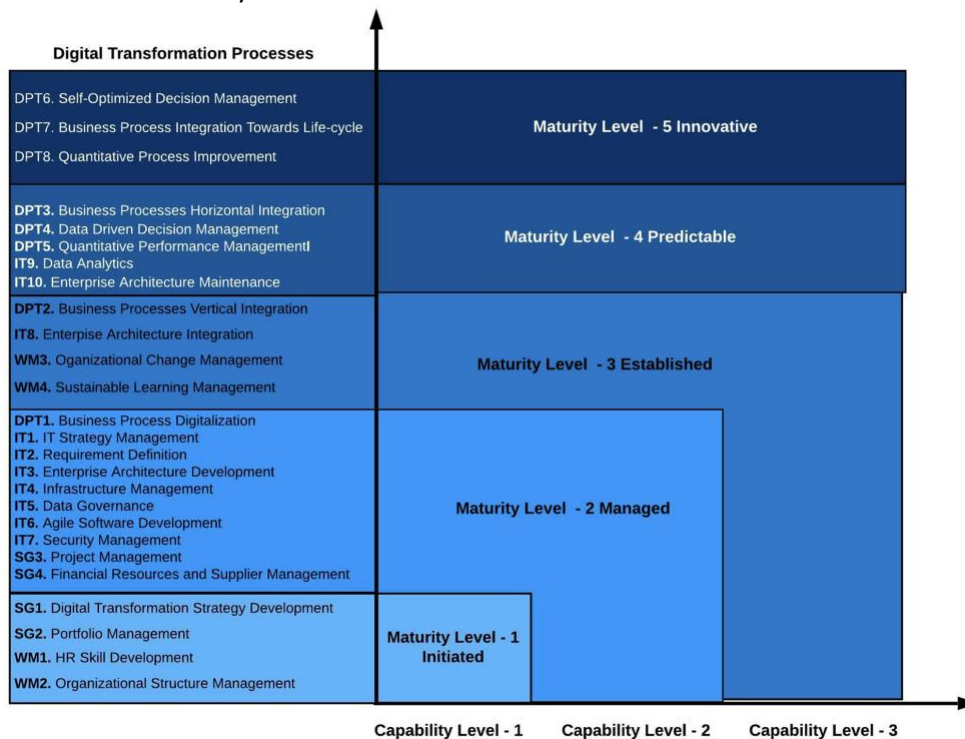


Figure 1: Digital Transformation Capability Maturity Model

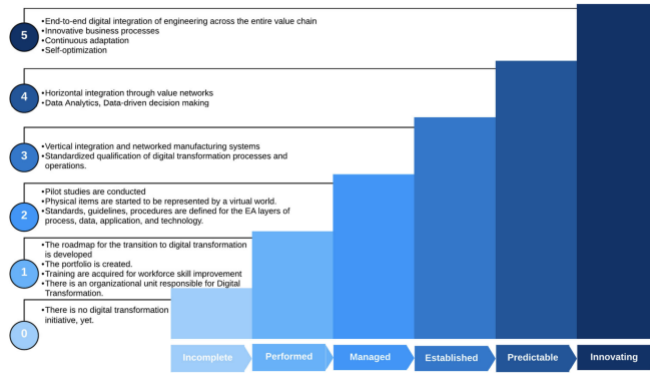


Figure 2: Digital Transformation Maturity Model

- Based on the models and the criteria that need to be covered to be at a certain level, I would identify RHDHV as at level 3. Please share your thoughts on this.

- *Business Process Management:* What is your level of knowledge of business process management (maturity models)?
- *DT Maturity vs. BPM Maturity:* Based on the factors of DT and BPM, I propose a two-dimensional model to visualize their dependency and impact on each other.

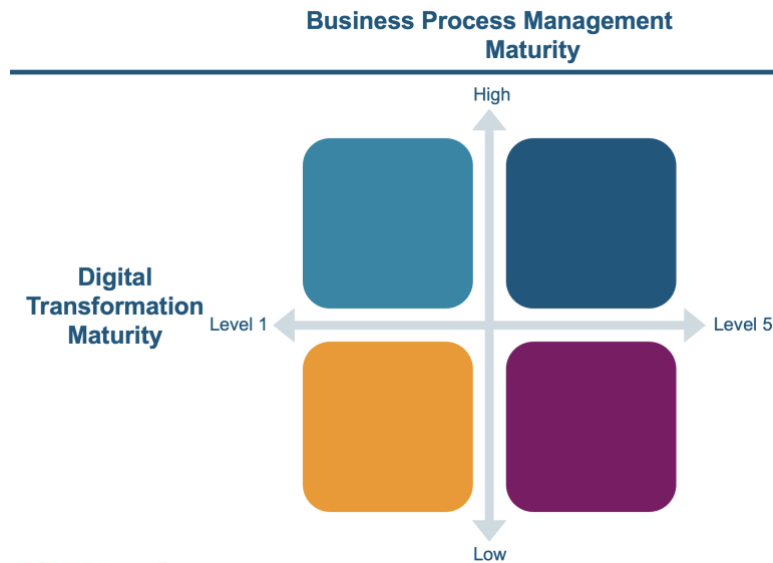


Figure 3: Proposed Framework

- The levels of BPM are divided based on these criteria
- Low BPM Maturity
 - o Processes are informal and undocumented, lack of standardization, limited visibility (no KPIs or bottleneck identification), reactive approach
- High BPM Maturity
 - o Standardized processes, continuous improvement, data-driven, cross-functional collaboration

- Considering only the ideal scenario, indicated by the RHDHV logo in the top right-hand corner, do you think that the checklist with the corresponding artifacts is complete? Do you think the language used is clear?

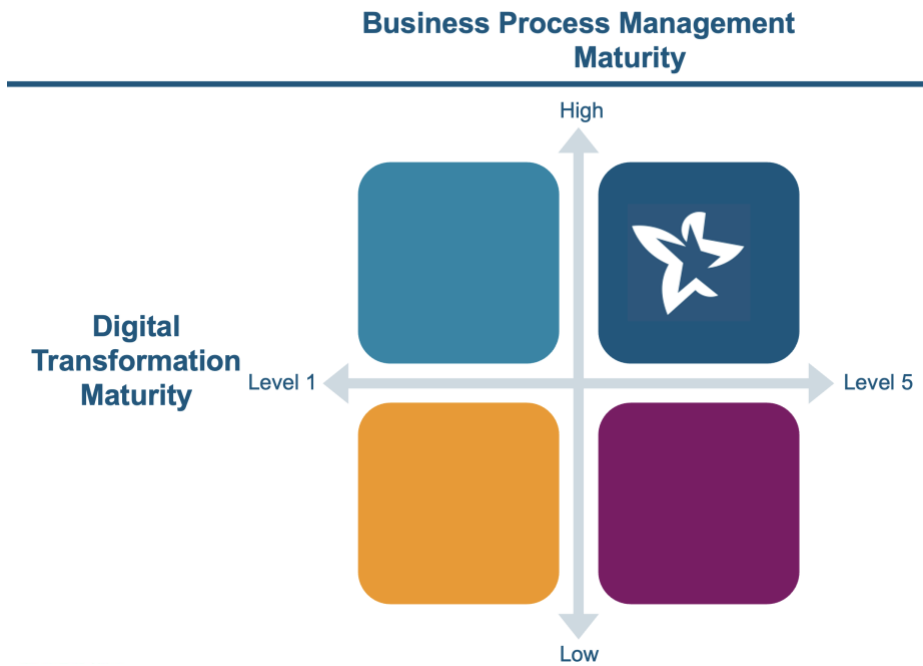


Figure 4: Proposed Framework Indicating Ideal Scenario

Priority	Item	Artifact(s)
1	✓ A clear vision and strategy are in place prior to the implementation	- Vision statement - Strategic objective
2	✓ Leadership actively supports the implementation	- Stakeholder engagement plan

3	✓ Business processes are compliant with regulatory requirements, industry standards, and internal policies	- Mapping of process to standard - Compliance status -
4	✓ Business processes are well documented in a structured, clear manner to ensure reproducibility	- Process flowcharts - Standard Operating Procedures
5	✓ Ownership is established for each step within a process	- RACI Matrix
6	✓ Established KPIs are used to measure performance and drive decisions	- Power BI dashboards with success metrics
7	✓ Culture of continuous agile improvement and scalability	- Retrospective meeting reports

- *What is your opinion on the top-down versus bottom-up approach?*
- *Application: Where would you place the risk assessment process on this model?*
- *What do you think needs to be changed to the current process to change the placement?*
- *How are you impacted by the risk assessment business process?*
- *Can you please take me through the process as you would use it in your daily work?*

Appendix B - Interview with Participant 1

Speaker 1 (Participant 1)

Wow. Yeah, very good. So my name is Participant 1, like yourself, I studied also in Eindhoven. I studied in technical university, did architecture and building and my thesis was on structural design. So that's my background. I started in 2000 at Royal Haskoning working for almost 24 years for the company. Now the first, let's say eight or ten years as a structural engineer but I've been exposed to international projects early on in my career. So when I worked for like one and a half year I went to Nigeria for Heineken projects. I did construction management. When I came back I did all kind of projects and then developing myself more towards a structural lead and then in the direction of project management and I'm currently also working as an associate director in project management and consultancy group for multinational clients and I'm responsible for our global account of Heineken for our company. And next to that I also have a role as a program manager for digital ways of working. I've been doing that just pre COVID so for the past three, four years or so and then very involved in the digital transformation of the business line of industry and buildings, which is a group of roughly 16 to 1700 people worldwide and as such help them towards a more data driven way of working. And as you can imagine, getting alignment on the way we work by using business process mapping is one of the basic elements in that. I also learned that change management is a very important factor in this whole transition and also cultural dimensions play a role. So there's not one size fits all and taking large group of people to this transition. Myself I'm married, I have a wife from Nigeria, so I like the multicultural aspect. I met her also when I was in Nigeria for that Heineken project and I like to play music, I do it at semi professional, also in different bands. That's a bit about myself.

Speaker 2 (Sophia)

Yeah, wow, that's a very diverse profile. So I think this is going to be a very interesting interview. Yeah, my next question was that are you familiar with the company initiative of digital transformation? But as you touched upon it, you are on the front line of it especially.

Speaker 1 (Participant 1)

Yeah, I even helped shaping it a bit.

Speaker 2 (Sophia)

Okay, and what was your role in kind of shaping the direction before the.

Speaker 1 (Participant 1)

We now have a Stronger 25 strategy. Right before that was Strong 22 and then such I had to make a translation from the company strategy towards the business line. And when the Stronger 25 initiative was developed I was also in one of the working teams on how we could deliver on this and I was in a group that looked into value teams. And that was compiled and then packaged as one part of the Stronger 25 strategy. I'm quite close to the strategy development.

Speaker 2 (Sophia)

Okay. And how would you define digital transformation in terms of key concepts for you, or what words stand out when you think of a digital transformation?

Speaker 1 (Participant 1)

For me, it's a change, let's say, from more traditional way of working. Let's call it a document driven way of working, where maybe the engineer or the specialist is central and develops documents which then go to the next person, and then that you have a transformation to a data driven project delivery where the data is central. And let's say the engineer and specialist can look into the data and I can mature this further on. For me, it's especially the people part is, for me, very important. So if you look at this transformation, then you have three main components, this people process, and let's say the last one is the technology or the tooling layer. And you can have understanding that the technology is not really the issue. So we can develop technology for every problem that we have, but to get people to think about their project delivery or an aligned process, understanding why becoming more data driven is important, that's key. There might be tooling already available, but if people are not using them, then you don't have a transition as well.

Speaker 2 (Sophia)

Okay. Yeah. So a little bit about me is that I was trying to look at different definitions of digital transformation, and I was not able to find one that really fit my research or what I really wanted to encompass. So what I actually did was I made my own definition. So I wanted to see if you agree with it or what you would change, whether the language was clear. So I'm going to share my screen for it. So this is the definition I think you should.

Speaker 1 (Participant 1)

Oh, I read through it as well.

Speaker 2 (Sophia)

Yeah, sorry, I shared the wrong one, but this was kind of the definition that I came up with. So I wanted to see whether something stood out to you or whether you don't agree with something. So kind of wanted to get your thoughts on it as well.

Speaker 1 (Participant 1)

I think it's a good definition.

Speaker 2 (Sophia)

Okay.

Speaker 1 (Participant 1)

Yeah. Yeah.

Speaker 2 (Sophia)

Because I didn't really find something that really stood out to me, so I wanted to encompass everything. So for me, it was more of a strategy, but also a sustainable solution that really concerned the redesign of not only people and technology, but also how the company is actually strategized and just bringing value. Because in the end, okay, we are a company, we want to get money, but also figure out, okay, the key resources, which was the people part that you were mentioning the digital technologies, but also the processes which I was mentioning in the business and operational models. So yeah, so yeah, it was similar to yours.

Speaker 1 (Participant 1)

Yeah, correct. So I think by being more data driven, you can enhance the consistency of what we deliver and then this will also facilitate data driven decision making for clients and also this will increase trust. So I think those are key components, but you can make it as wide as you want. I think the definition is quite good for this when we try to define also why we do the digital transformation. And then as you know, we have structured our company now also in so called global leading markets. Probably you are familiar with that one of those markets within I&B, industry and buildings, we have three global leading markets. One is mission critical facility data centers. The other one is light industry. And there is a global leading market on renewable energy and decarbonization for industry. For the middle one, light industry, I am part of the digital lead team and we have also tried to prioritize why it's valuable or relevant for clients to do so. And within that market we see, for example, that time to market is very important. If client has taken the decision to invest in a production facility, for example, that they are able to in a very short time able to operate the asset. So here, digital transformation or more data driven approach can help by delivering faster, for example, but also with less failures, for example. And clients, they're making big investments, so they want those decisions to be data informed. So those are some components, I think, to show you. And if you are doing this, you get a more, you come into the space where you are seen more as a partner than as a supplier for a client. Those are drivers for this particular market, probably for more markets. This is relevant. Just a sidestep here.

Speaker 2 (Sophia)

Yeah. All right. That was a pretty good answer. I think it was pretty clear for me. The next one that I wanted to go out is that for my specific research I am using this model. It's a digital transformation capability maturity model. It's combining the capability maturity model, but with the digital transformation maturity model. Are you familiar with this model? Have you seen it before or is this something that's completely new?

Speaker 1 (Participant 1)

Yeah, I've seen it because you send it to me, but before I've seen. So within Royal Haskoning, we also have a five step maturity model which is somewhat aligned but not. It looks a bit like this one, but it's not fully aligned. I think the first levels are quite the same and the other ones are defined a bit differently.

Speaker 2 (Sophia)

Okay. Yeah. So based on this, we're just going to take a look at the right hand side. So the maturity models so initiated, managed, established, predictable and innovative. So this is a little bit more in detail about which level indicates what criteria needs to be met. Based on the criteria that I have read and my experience within the company I have identified as Royal Haskoning to be at the third level.

Speaker 1 (Participant 1)

I read that. Yeah.

Speaker 2 (Sophia)

Yeah. So I wanted to kind of get your thoughts on this and what whether you agree or no.

Speaker 1 (Participant 1)

I don't agree, no.

Speaker 2 (Sophia)

Okay.

Speaker 1 (Participant 1)

I think unfortunately we are somewhere between one and two, I think.

Speaker 2 (Sophia)

Okay.

Speaker 1 (Participant 1)

And I can understand that you, where you were exposed probably you will see that level. Just to mention that it's a big company, over 6000 staff but there are, there's not an aligned maturity level through all groups. So you will see some groups that are frontrunners. Majority is really not at that level yet. I've been exposed to quite a large portion of our company with I&B. I have quite an overview and that's already more than one fourth of the company and I'm afraid that we are somewhere between one and two. Yeah.

Speaker 2 (Sophia)

And if you had to place it at a specific one, which one would you choose? Would you choose one or two?

Speaker 1 (Participant 1)

I think we are one.

Speaker 2 (Sophia)

Okay.

Speaker 1 (Participant 1)

And so I know that there are groups that have higher maturity and there are some that are say at zero but all in all I think we're at one.

Speaker 2 (Sophia)

Okay.

Speaker 1 (Participant 1)

And I'm afraid that goes also for the other business lines as well because let's say for business process mappings I have quite a good overview of where we at and we are, I'm seen as a front runner with business process mapping. So that also says something, right?

Speaker 2 (Sophia)

Yeah, yeah. So that leads me actually into my next question is like what is your experience with business process management and maturity models and what's your level of involvement within the company or just in general outside of the company as well?

Speaker 1 (Participant 1)

Yeah, so I'm very active with business process mapping within IMB for all the three global leading markets together with Novius in the past two years we've been active in mapping parts of the process and for data centers was the first GLM that we worked on. We helped mapping some of the stages where they're primarily active and they use like REBA stages which may or may not be familiar with you.

Speaker 2 (Sophia)

No, I'm not familiar with it.

Speaker 1 (Participant 1)

Unless I think within all industries that there is a certain phasing. So from maybe a business planning phase towards conceptual feasibility and then you mature towards actually executing the project and operating the asset this particular group was especially working on, say basic design, detailed design. Somewhere in that space and in that market they use REBA stages, which is like a UK system in light industry. We try to create an overview of what are all the services needed, if you want to. The client has the question of developing a production facility somewhere in the world. So we really try to look very broad into our company. Which services are we supplying but also which services are needed and we are not supplying yet. And try to map all activities through the different phases of the project. And there we use front end loading stages, Val 0123 and then you have your execution phases and your operation phase. And that's a quite extended version of a business process map actually.

Speaker 2 (Sophia)

Okay. Yeah, because you also mentioned that the digital transformation within the company is about a level one, considering both of the business process management and digital transformation. What I have proposed is kind of a quadrant model. So you have along the horizontal line you have the digital transformation maturity, which we just talked about from level one to five, and then the business process management maturity, which is from low to high. Just a little bit of background. What I considered low is processes are very informal, undocumented. There's not really KPI's that are being used to measure anything. And a high maturity is standardized processes. There's improvement and data driven decision making, which is another point that you have made earlier in the interview. Where would you kind of place RHDHV?

Speaker 1 (Participant 1)

My answer doesn't change too much, it's at the lower business process management maturity. Although we're taking steps right, by the last years we've bring people together and having the discussions and coming to like a common understanding of what an aligned process should look like and capturing this in business process mapping. So that's where we are. So representatives of disciplines are coming together to try to put these processes on paper or in business process models. Some of it is very advanced as well as that really. We've developed tooling connected platforms where we can do automated engineering, but in the large scale of all our resources. Not everyone is using this yet.

Speaker 2 (Sophia)

So you would say. So somewhere in the orange bottom left quadrant, right?

Speaker 1 (Participant 1)

Yeah. Yes.

Speaker 2 (Sophia)

Okay. Yeah. And what do you think? So basically what I've done is now I've tried to look at the ideal scenario, which is in the top right hand corner. So we have a high business process management maturity and a level five of digital transformation. And I have kind of come up with a checklist that we have that I have seen of overlapping items, so to speak, that could be used as a checklist. So, for example, the first one would be a clear vision and strategy in place. So that would be a vision statement and a strategic objective. Did you get a chance to look over it? And do you agree with any of these? Do you think something needs to be added?

Speaker 1 (Participant 1)

I didn't take, I briefly looked at it, so maybe it's good to go through it.

Speaker 2 (Sophia)

Yeah, yeah. So what I've done is the first one is a clear vision strategy, as I said in a vision statement and strategic objectives. So I think that's with any project, you really need to know where you're going and kind of just not blindly guessing and checking. And then the second one is, after you've defined these, that you need leadership to actively support the implementation. So that's correct. From a top to bottom approach. Yeah. Even though the people, let's say at the bottom, are executing the work, you still need people at the top to support and help drive the project. The third one that I've indicated is that business processes are compliant with requirements, industry standards and internal policies. So that's mapping each process and their compliance status. And then we have that the business processes are well documented in a structured, clear manner that is dependent on the company, dependent on the process. So then we have some sort of flowcharts and standard operating procedures. And based on the processes and the different steps that we have identified, we have an ownership, somebody needs to be responsible. So then we have the RACI matrix, maybe you're familiar with it, that's responsible, accountable, yeah. Consulted and informed. And based on that process, we have KPI's that are used to measure performance and use it to make data driven decisions. So currently we are using power bi. So that's power bi with certain KPI's that are identified and then a little bit of a culture of continuous improvements, because, okay, you can make it, but as I defined it in my definition of digital transformation, you need to have continuous improvement and scale it up. Even though it can be a mini project, it needs to grow into the company and not just make it for a small part and then kind of leave it there.

Speaker 1 (Participant 1)

I think what is, these points are important and clear and I think it's also correct. You started also with, I say, top down approach, right?

Speaker 2 (Sophia)

Yeah.

Speaker 1 (Participant 1)

What I've noticed is that the bottom up is also very important and actually the most successful, let's say, initiatives that we see, they started bottom up and it's not here in your priority list. Right. What you sometimes see is that in order to create the line management buy in. You also need to have, let's say, demonstrators or show the right examples that can be embraced by the higher management, and then they are also convinced and are behind this at this idea. And I think that's some elements of change management. So you have a couple of steps that as a person, you need to go through some stages in order for change to be successful. And that starts, I'll just give you some theory behind it because I think it's important. So first stage is awareness, so you need to understand why you're going through a certain change. Second stage is desire, so that you know what it's about, but you also have the desire to support this change. The third step is knowledge. So you need to educate, be educated on what is needed. Then you have the step is ability. But then not only you have followed a course or a training, but you're actually trying it out in your projects, for example. And the last one is the reinforcement. So then how are you going to sustain the change? You have to follow these steps in that particular order as well. And in fact, in the end, you want all your employees to have the desire to make this data driven change. But also the line

manager goes through the same steps. So also the line manager needs to really understand what it's about and also has to desire to make the change and to create that awareness and desire. They also need to see tangible examples or successes that can really make it an internal desire to support this. And that's why it's very important to support, let's say, bottom up initiatives that are in line with the strategy. And you will see that there are some key players that may not be the business unit director or business line directors, but you have to form a team of people that can really make the change and then put the wheels in motion and then get the line management buy in, and then things start rolling. So you need that to go from front runners to early followers. You need to manage this process as well. And I have not seen too many of our higher line management really driving this yet, but if they are convinced and see that it works, then they like to embrace it and then the wheels start moving.

Speaker 2 (Sophia)

So if I understand correctly, yeah, you're talking about something like a minimal viable product.

Speaker 1 (Participant 1)

Or an approach. Right? So we have some examples like computational design and engineering or parametric design, for example. Why this is embraced by a company? Because some front runners took the decision in a project, we're going to do different now. And they did maybe for the design of a football stadium, for example. And they've shown, look, this can work. So they did not ask for permission upfront, but they did it and they made it successful. And then they showed, look, this can work. And then things start evolving into maybe, okay, we have to look into a computational designer engineering, for example. But if it's just an idea without being showing the success that can work, it's very difficult for people to embrace this and support this. Does that make sense?

Speaker 2 (Sophia)

Yeah, I understand a little bit what you're talking about. And then would you put it in between the first and second item, or where would you place it, for example?

Speaker 1 (Participant 1)

Yeah. So there is a clear vision that we want to become a data driven company. Right. So that's between one and two. A lot of things happen because you need to make a translation from, let's say, the vision statement of the company or the corporate strategy, to which, what does it mean for our business? And what can be an example that demonstrates that this could be valuable and work? You cannot just sell a strategy to a client as well. So a client needs to see and recognize it for their particular business that it could work, and then they might be seduced to go through that route. Right. And give you the opportunity to start developing this with the client.

Speaker 2 (Sophia)

And because I made this checklist for kind of the ideal scenario and, yeah, an organization would ideally have all of this. But you mentioned that you believe that RHDHV is at a level one.

Speaker 1 (Participant 1)

Yeah. There are groups that are higher. So the point that I want to make is that I think the successful companies, and you can take, let's say, the apples, the Googles, or whatever company, they had an attitude of just do it, they go for it, they try it out, and then they fail. They learn, they become better, and that's how it goes. They don't start, in particular with putting a lot of thought maybe in a high over strategy, but they have an idea and they make it successful, and then they build upon it.

Speaker 2 (Sophia)

So it's kind of a trial and error and then building up on the successes.

Speaker 1 (Participant 1)

Yeah. Who jumps out of the plane first? Maybe that's the most innovative person. Right? Who figure out how to go outside the plane and that's it. Do you understand a bit what I'm.

Speaker 2 (Sophia)

Yeah, I know what you mean. It's the most like courageous or brave people that really embrace the change and being different. It's not just like doing the same thing and hoping that it's something different.

Speaker 1 (Participant 1)

Think we progressed a lot with the business process mapping by starting to do it rather than trying to overthink all the scenarios why it could or should not work. You have to do it and experience and learn. And that's the point. That's very important to have a successful transformation. Yeah. And don't spend years with making all kind of plans, but have a vision and then identify, okay, what could contribute to this and start doing it. That's important.

Speaker 2 (Sophia)

Okay. And where do you think, for example, in this checklist, where do you think that RHDHV could be more proactive or strengthen its approach in it, where do you kind of see it going? Not wrong necessarily, but where is it lacking or what part can RHDHV improve in order to come to a higher maturity level?

Speaker 1 (Participant 1)

Yeah, maybe try to, in some way try to support frontrunners in such a way that it also contributes to where you want to go as a company. And that's a bit tricky because those are, you need the pioneers to, let's say, to innovate. Right. It can also be if you have pioneers, that they go in different directions and then it might be difficult to scale it up. So that should be some kind of a balance. And because you want to support and say, challenge your talents, right. And then they have to take along a larger group. So that's a balance as you want to support the front runners, otherwise those talents are not working for your company anymore. They cannot run too far ahead. Otherwise there's no connection with the larger mass of the company. Those are things that you have to look at, I think. And as such, I think which structured platforms

can support this without being too limiting to front runners and big companies, sometimes they lack a bit of speed as well. So frontrunners want to go fast and keeping up with them and with what they need might also be a challenge.

Speaker 2 (Sophia)

And for example, because there are standardized processes and as I mentioned, they need to be compliant with requirements and industry standards and internal policies, do you believe that we are optimizing those process or there is still room to grow there?

Speaker 1 (Participant 1)

I think there's always room to grow, but I noticed what we are working on, that this is exactly what we're doing. We're trying to map the process and trying to get an alignment on which activities inform the other ones. How is data flowing through this? This is something that we are constantly working on in a more structured way than ever before, I would say. So we are in that journey currently.

Speaker 2 (Sophia)

So it's a better approach than what we've tried in the past. So you believe that it's one of the most front running approaches that we've had.

Speaker 1 (Participant 1)

Yeah, yeah, I think so. Yeah. So I really support the idea of having, let's say, an international standard for business process mapping. And with this, we have like an umbrella or a framework in which we can look in all different initiatives that we have. We've organized our company, let's say, also with knowledge groups. Have you heard of those, Sophia?

Speaker 2 (Sophia)

Yeah.

Speaker 1 (Participant 1)

So the knowledge groups, they are in the lead for how you perform a certain activity, but you want to connect this also to the teams that are actually working on projects for certain markets. So you need to make that connection between the knowledge groups. In a certain market, you will have a set of different activities and which may differ. Say, that configuration might differ a bit from one to the other market, but an activity as such that can be highly standardized. I always see, like, the knowledge group, maybe they define the Lego blocks, for example. And with the Lego blocks, you can make all kind of objects, right?

Speaker 2 (Sophia)

Yeah.

Speaker 1 (Participant 1)

And you have to package this in such a way that it's scalable. And I think that's the aim of doing the business process mapping. Also discovering this, get an overview of what is our process, but also how can we improve on it. And by making this very explicit, then you can look for synergies between the different global leading markets and have more focus on the way I go.

Speaker 2 (Sophia)

So from what I'm understanding is that right now, we're having the knowledge groups kind of talking to each other. But you believe that it's important to kind of get them to talk to each other and see how they can learn from each other, but also collaborate and cooperate.

Speaker 1 (Participant 1)

Yeah, but especially making the connection to the business. So the principal, the knowledge groups, they look at their own discipline. So you could say they have a mono disciplinary approach. Right. But if you're doing a project for a client, that's almost without exception a multidisciplinary task that you have. There are all kind of links, and the one activity of a discipline informs the next one. It's important to get an overview, but also find where are the needs for that market. And that needs you can bring back to the knowledge group, maybe to develop a certain tool or template or process, whatever is needed, but you need to learn and make that connection.

Speaker 2 (Sophia)

And because you mentioned something about change management and kind of the culture aspect within the company, do you think that's the biggest challenge that we have to connecting it to the bigger market?

Speaker 1 (Participant 1)

Yeah, I think cultural aspects, yes. I think that's one of the biggest challenges that we have. But it's more on the mindset of, we have a company of highly educated people. Right. Which value their creativity very much. And I say making the cultural chain of a data driven approach or mapped processes that are not fighting with creativity, I think that's important. So you can still use your creativity and have an aligned process. I think it even can free up time for the creativity to happen. And I think that's a bit a challenge that we have, that people might think, okay, procedures or standards. Oh, this is limiting me as a professional. Right. Whereas I think if you harness it can make it very powerful.

Speaker 2 (Sophia)

Just reassuring people that they're still allowed. To do what they want, just in. A more standardized way.

Speaker 1 (Participant 1)

Maybe not allowed to do everything you want, but maybe you have an objective with what you do and see. Does it need to be ten times different if there are different discipline leads? Or can we come to a common understanding and then also understand that, okay, what is the value of having a common understanding? Right. For a client, it shouldn't make too much of a difference. If I ask Participant 1 or

Sophia, if I. If you're asking for a certain task, I want to have the best answer for my problem. Right. And she shouldn't be too much dependent on how I feel today or how you feeling today. Right. It should be more consistency in our delivery and have enough better structured data. I think it's very important. We are doing so many projects all across our company, and it's very hard to actually use the data that is being generated throughout our company.

Speaker 2 (Sophia)

So there's not really a connection between the data sources, which is difficult to kind of push us to a different maturity level, you would say.

Speaker 1 (Participant 1)

Yeah, yeah. Not only connection, but I think our data is not structured and labeled correctly. That's an assignment also for, I think maybe for, let's say, the stronger 25 group to have a more clear data strategy. So how are we. Are we going to structure our data? Which sources can we use, and also do it in such a way that it's scalable? To give you an example, I worked a lot for Heineken Breweries. Let's say I go to a country that client has never gone before, and I need to prepare a design and cost estimate. For example, let's say it's in. Let's say probably it's there in that country, but let's say I go to Rwanda, for example. I have never done a brewery over there, but I need to have the prices of concrete, for example. But we have done HABAK projects where we have this kind of information. You should think that it would be easy to get data on concrete prices in that country because we've done projects before. It's very hard to get this kind of information. That's just one example. Right?

Speaker 2 (Sophia)

So it's inaccessible for the professionals within the company, making it harder to actually do their job.

Speaker 1 (Participant 1)

Because we don't do, we don't identify that data in a structured way and as such it becomes almost unusable.

Speaker 2 (Sophia)

And would you add it as a fourth pillar? Because you mentioned that it's all about the processes, technology and people. Would you add data as a fourth pillar or would you put it underneath?

Speaker 1 (Participant 1)

No, for sure. Yeah. Yeah. It's very important. Yeah. I think also if I look at what are the points that you have, like a clear strategy or things that you do or maybe developing a good roadmap in our roadmap is also define what relevant data is for your project or client. Start with this, start building that, the data ontology so that we can harness the power of data.

Speaker 2 (Sophia)

And would you add that as a new item on, for example, if we're still talking about the checklist to kind of get to the high maturity, would you add it as a new item to make the roadmap or would you add it to an existing item, for example?

Speaker 1 (Participant 1)

Yeah, that should be part of a roadmap. Right.

Speaker 2 (Sophia)

All right. I think it was pretty clear to me then. Do you have any feedback or questions for me?

Speaker 1 (Participant 1)

No, I think it's an interesting topic that you're working on.

Speaker 2 (Sophia)

Yeah. Well, thank you for your time then.

Speaker 1 (Participant 1)

Good, yeah. Good luck with the other interviews. How many that you have already and are you going to do?

Speaker 2 (Sophia)

You're actually my first one. So that's why I was asking whether you have any feedback or anything for me. And if you think of anything afterwards, please let me know as well.

Appendix C - Interview with Participant 2

Speaker 1 (Sophia)

Okay, we can start. Well, thank you for taking the time to talk to me about my thesis. So, my thesis, a little bit about it, again, to reiterate, is that I'm looking at different models for BPM maturity and digital transformation maturity. And currently I haven't been able to find one that combines those two concepts. So I was very interested into looking into that. And you have been identified as one of the stakeholders or person with more knowledge about it. So yeah, hoping to get more information and your viewpoint on this. So if you could introduce yourself a little bit about what your position is in the company, how long you've been in the company, and, yeah, your main responsibilities.

Speaker 2 (Participant 2)

Okay, so, as you know, I'm Participant 2. I am with our, what we now call operational excellence and risk management corporate group. And within that corporate group, I look after primarily our... So it's a dual sided approach. I look after our existing project management processes and systems and applications from a functionality and user perspective. So does it align with our organizational needs and objectives? Does it match our requirements from a project management perspective to enable us to deliver our projects and thereby obviously also achieving our strategic objectives? And then aside from that, I also look at any, and run with any corporate projects or initiatives that we may wish to implement that would further enhance and optimize our existing ways of working. So it's looking at continuous development, aligned with our operational excellence mandate, and then feeding into our strategic objectives, which, as you know, is currently our Stronger 25 strategy. So seeing how the organization and our operations aligns to enable us to achieve that objective, and then looking into our systems and processes and applications that our project managers use to obviously facilitate that.

Speaker 1 (Sophia)

All right, well then you've got some, quite some diverse roles.

Speaker 2 (Participant 2)

And I've been with the company since 2016. So what's like my 8th year now in various roles, but primarily focusing on project management. So both from a business perspective, so in projects, line management, still focusing on project management. So more the governance of project management within the business, and then more recently in the last three years, looking at the corporate. So the organizational side of it.

Speaker 1 (Sophia)

All right. Yeah, thank you for the extensive answer. So you have a little bit of experience in a lot of areas, which is good. So my first question would be, are you aware that the company has a current initiative for digital transformation?

Speaker 2 (Participant 2)

Yes, I am very well aware of that. I'm not too familiar with the intricate details of it, but I am aware of the digital transformation strategy and the ambitions in that regard.

Speaker 1 (Sophia)

And when you think of digital transformation, what kind of key concepts or words that would stand out to you or you associate with this concept.

Speaker 2 (Participant 2)

So if we look at an organizational perspective, for me, digital transformation is really transforming our ways of working so that we can bring more digital innovation, automation and efficiency into it, focusing more on a client centric approach to how we can enhance our service offering to our clients, but also make our operational so our internal ways of working more efficient through the use of digital innovation and like I said, automation. But in order to achieve that, you first need to start with the building blocks, which is streamlining your way of working. So knowing what are your organizational processes, your business enabling processes, having these clearly defined and having a standardized way of working so that you can actually implement digital, transformational, digital innovation in that, because without knowing what it is or how we are doing things, you can't really embrace digital ways of working, because there is no standard approach. And also making use of the data and information that we collect throughout our operations and being able to reuse that in various facets. But that, again, needs a standardized approach so that we have a streamlined way of operating and collecting and gathering of information.

Speaker 1 (Sophia)

Okay. So since digital transformation is kind of a newer topic, I would say, in the market, I did not really find a definition that would fit a holistic overview for my research. So this is kind of the definition that I came up with that combined different ideas from different researchers. And you touched upon the user experience, but also looking at business models and operations and of course, our capabilities as a company. Do you agree with the definition that I have? Is there something that you don't agree with or you think is a bit more iffy?

Speaker 2 (Participant 2)

Yeah, no, I think overall, I would agree with that statement. I mean, it touches on the really, the fundamental bit of it that I think is the redesign of your business and your operating operations model. So understanding how that work and whether your way of working will actually enable digitalization of your business and operational procedures, you know, if it's not, if you're still working in a very outdated way, then saying that you're going to digitize or leverage digital technologies would be nearly impossible. So you need to understand how you need to tailor your way of working to be able to leverage off of the digital technologies and actually make use of them. And then along with that, is obviously bringing your resources along to ensure that your capabilities, your knowledge base, your skill sets, grows along with the evolution of your ways of working.

Speaker 1 (Sophia)

Yeah, because the difference that I kind of heard between your key concepts and what I have introduced is the resources was something that I had where you did not touch the bottom, but indeed you're agreeing with the resourcing and the people and really bringing in the skillset. So that's good. So we're on a similar wavelength. So as I mentioned before, I'm looking at the digital transformation maturity and the BPM maturity. So what I have used is the digital transformation capability maturity model to define the different levels of digital transformation. So we're going to be taking a look at the right hand side, which is the maturity level from initiated to innovative. I don't know, have you seen this model before? Does it make sense?

Speaker 2 (Participant 2)

Yeah, I haven't actually seen it before you introduce it, but it's actually quite an interesting model. Very relevant, I would say. Applicable.

Speaker 1 (Sophia)

So looking a little bit more into the specifics of the digital transformation maturity model, these are a bit more of the details about it. And I wanted to make a bold statement of, I think from my experience that RHDHV is somewhere in the third stage. So this is the managed, oh sorry, the established stage. And is this something that you agree with from your experience or do you have a different opinion on this?

Speaker 2 (Participant 2)

I would actually say that we more towards the upper end of level two. I don't think we're fully in level three yet at all. I think we're making inroads to being into level three, but I personally don't think we're in level three yet. And I'll tell you why. If you look at level three, it already talks about vertical integration and network of your business processes. It talks about the standardization of digital transformation processes and operations. We're not there yet. I think

we are more in the advanced section of level two where we are starting to understand the importance of digital transformation, but also really coming to grips with the enabling factors, which is your standards, your guidelines, your processes. And that's where your IMS comes into play. Like if you look at where we are now with the IMS or what we previously had in the very recent future, it's nowhere near where it needs to be to enable a true digital transformation. So yeah, I would really say that we're closer to the upper end of level two. And hopefully very shortly IMS going to be moving into level three.

Speaker 1 (Sophia)

And do you believe that the IMS project, which is. I'm a little bit familiar with it but not completely, is the catalyst that will help us move to the third level? Or what is the biggest challenge? I guess that we're stuck still in level two.

Speaker 2 (Participant 2)

I think it's the standardization of our ways of working, really like one understanding what different operational procedures we have, what different governance procedures we have, what different business enabling procedures we have, and being able to formalize those and document those, and ensuring that there is a standardized approach to the way in which we work, and then looking for areas or opportunities for true digital transformation using digital technologies available to us. I mean, one very good example, like you would know, with the ICA automation that we're looking at, for instance, we don't even have a formalized procedure that governs how an ICA should be. You know, if you look at from start to finish how you do an ICA. So understanding how we can optimize that through digital technologies is difficult if you don't have the entire process mapped out, because if you bring in a digital technology, you might not truly be servicing the process. So you need to understand the process first and ensure that we can work according to that process to be able to bring that digital age to it. And a lot of our business procedures are still very, you know, like analog, very outdated, manual based procedures. So there's definitely a lot of room, but we need to understand, we need to ensure that we have the people, the processes, and then the technology bit that facilitates the processes. So just starting with technology is not going to give you that sustainability that your digital transformation definition spoke about.

Speaker 1 (Sophia)

Yeah, all right. That was pretty clear, I think. So what I have done is because there is no framework or model currently that exists in the academic world that combines the digital transformation maturity as well as the business process management maturity. What I have done is I've made this model that indicates on the horizontal axis, the digital transformation maturity, indicating level one to five as defined from the previous graph, and the business process management maturity based from low to high. And what I consider low BPM maturity is that processes are informal, undocumented, there's no standardization, and there are no KPI's keeping track of how the process is going. Yeah, performing basically, and with a high maturity of standardized processes, continuous improvement, dashboarding and monitoring. Where would you place Royal Haskoning?

Speaker 2 (Participant 2)

In terms of business process management maturity? I would put us at the moment to the lower middle part. I think we're not low because we've made some real significant steps there, at least to acknowledge that we need to move into more of a business process management model. So like a BPM framework and align that with what we're doing with the IMS, but we're not there yet. So we've started mapping out some processes, we haven't really started managing them because these are all newly generated processes and we really haven't touched on the modeling part. So having, so that's where you've mentioned in that level three is where you really have like integrated processes. So at the moment we're sitting with flat processes, and then the next phase of the IMS, after the launch of the web portal, that's where we're actually moving into, is finding a true BPM solution that can help us to model our processes so that they are integrated and not just flat.

Speaker 1 (Sophia)

Okay, so you would say somewhere in the orange square, maybe?

Speaker 2 (Participant 2)

Yeah, probably.

Speaker 1 (Sophia)

All right. That was pretty clear to me. So what I have done in terms of this research because of time constraints is I wanted to look at the ideal scenario, which is the dark right hand corner indicated by the company logo in the top right. And I've prepared a checklist or items which kind of need to be present in order to reach that ideal scenario. I have prioritized them based on my initial research and instinct, along with an artifact that goes along with that priority. So I wanted to just check in to see whether you agree with the items, whether there's something missing, whether you would shift around the priorities. So first we have the clear vision and strategy are in place. So that's your vision statement, your strategic objective. Then you have the leadership that's actively supporting the implementation. So yeah, that's your stakeholders, your management, your c level positions. And then you need to ensure that the business processes that are existing within the company are compliant to industry standards or internal policies. So mapping each process and checking their compliance status regularly, then you have the, as you spoke about, the business processes are well documented and structured in a clear manner. So the flow charts that you mentioned, the standard operating procedures, and after all of those processes are broken down, then you have the ownership in terms of a RACI matrix or there are other alternatives as well to really understand who's a part of each part.

Speaker 2 (Participant 2)

Your ownership model. Yeah, yeah.

Speaker 1 (Sophia)

And then you have the established KPI's used as performance measures to help with data driven decisions. So that's your Power BI dashboards. And lastly you have the culture of continuous agile improvements. So that's retrospectives and just checking in the progress. So yeah, I just wanted to get your take on what you think maybe is missing or what you would reshuffle around.

Speaker 2 (Participant 2)

I think your priorities are generally, I would agree with the audit at the end, but I feel that there's something missing from here and it's something that's maybe a little bit more difficult to quantify or a little bit more intangible, but that is also your organizational culture. So we're talking about checklists for implementing this whole BPM framework, or you're increasing in your maturity, but this is only really effective if you have the correct culture that is stimulated by that leadership. So leadership just actively supporting the implementation needs to drive behavioral changes so that we do embrace the documented ways of working. So I would, you know, probably even before number three, put that cultural element in, personally. So I would have an 8th priority because just having documented processes is not going to change anything in terms of your organizational activities or your organizational behavior. So there's a huge element of this, there's also cultural, and that feeds into your change management aspect.

So how you bring your users along, how you consult your users on the development of your business processes, and that also helps you build that whole ownership model. So I feel that cultural element is a really important one.

Speaker 1 (Sophia)

And from looking at this checklist, it's more of a top down approach. But then we also have the bottom up. What do you think would be more effective in this case? Do you think that, the top down or bottom up?

Speaker 2 (Participant 2)

You know, you need a combination of both and you need to look at, because for different components of your business processes, you'll need a different approach for something that we call it our, you know, our organizational governance processes. So that's really like the strategic, the vision, the mission, all of those like real strategic organizational processes and documents that needs to be driven top down because that's not, you need buy-in and support, but that's really the organization deciding which direction that they're going in. If you get into more your operational elements. So our ways of working, how do we run our business, how do we do certain processes within discipline specific areas, I think that needs to be informed bottom up because you need to create that ownership model there. So you want buy in, you want support, you want ownership. And that happens from a bottom up. And that is done through also stakeholder engagement, consultation, having, you know, like key users provide input into the generation of those processes so they can also help then distribute the information and assist with the adaptation. So the implementation of your procedures. And that's not going to happen if as an organization or as a corporate group, we just dictate to people. Now here you also need to factor into cultural nuances. If you do this in other parts of the world. Yes, it could work. If you do this in the Netherlands, you need a combination of top down and bottom up. Otherwise it's never going to work.

Speaker 1 (Sophia)

And yeah, because of the international nature of the company, then it's more of a combination because, yeah, we have people that are all over the world, so it's a mixture of cultures.

Speaker 2 (Participant 2)

It is, but your predominant culture is because the largest constituency is based in the Netherlands. And I know we make jokes about that all the time, but that is such an important factor to actually understand the culture within which you working because that will inform what type of approach is needed, you know, so it's also like, I don't think that this is a one size fits all. You need to understand your organization. You need to understand the culture within the organization. And you need to tailor approach that actually speaks to the culture of the organization or that can stimulate the change in behavioral culture that you would want to see.

Speaker 1 (Sophia)

Yeah. So what I have kind of planned to do next is because this is on a more broad level, to try to figure out whether the checklist could be reproducible in terms of other companies or within the company as a whole. I have taken upon myself to look at the risk assessment process, which I know you're quite familiar with, and working with it on a daily basis. So that's kind of the application that I'm looking towards within the company. Just taking a look at the risk assessment process within the system and within how you perform the daily activities. Where would you place that process specifically in this kind of framework?

Speaker 2 (Participant 2)

Okay. Just important to understand, when we talk about risk assessment, are we talking about the application of risk management within projects?

Speaker 1 (Sophia)

Yes.

Speaker 2 (Participant 2)

Because there's obviously organizational risk management, and then there is your project management base. So your project, the project management base. Okay. So if we're talking about the project management, I would definitely put it in that orange box.

Speaker 1 (Sophia)

Okay. And what would your argumentation be for that?

Speaker 2 (Participant 2)

I think we're very low in our maturity. The process is not clearly defined. We've actually, now we have started documenting a risk management process. The process is not clearly defined. If you look from a more practical perspective, at your risk assessment plans, for instance, that you see coming out of Drive to Win, you will notice that there is a vast difference in terms of completeness, like content wise. So the detail, what is actually contained in there. And I think that as an organization, we also really lack knowledge and capabilities in terms of risk management. It's not something that we have truly prioritized in projects. So although we have a rudimentary technology through drive that does enable risk assessment, risk management, I think the procedural and the operational side of it is really lacking. And that's something that we need to pay attention to, that we are focusing on. And you also see, you know, my sentiment is also supported by our project results. So you see that coming through in the project results. And when you delve down into project results and you look at why certain things have happened, it is primarily related to poor risk management aspects that we could have identified at the start that we should have either mitigated or put mitigation measures in place for, or that we should have allowed contingencies for, and we just did not do so. And that then impacts on our project results. And again, like I said, all you need to do is go and look at some of these risk mitigation plans and they are very poorly done. Very, very. The level of detail in there is very poor. And then, if anything, we primarily only focus on through the risk assessment, on the organizational risk factors. There's a huge element of project specific

risks that I think that we are lacking. Now, putting a process in place is one thing, but again, the adoption and the compliance to the process is really where it comes in. And that needs to be supported by learning and development. So an improved knowledge base in the discipline of risk management, and then proper performance indicators, so better measurements so that we can understand where we at the moment and what interventions or further improvements are required to actually get us to a better maturity level.

Speaker 1 (Sophia)

And what do you think needs to be changed within the process so we can slowly inch our way to a higher maturity. You mentioned documenting the process.

Speaker 2 (Participant 2)

So if we go to your checklist, for instance, let's use your checklist as a case study, for instance, we need a clear vision and a strategy from an organizational perspective in terms of what is it that we want to achieve with risk management on projects. I don't think we have that at the moment. We are working on that. So these are work in process. So we have identified that these are the things that we need, but they're not fully established yet. Then we stuck at .2 leadership needs to actively support the implementation. So leadership is a big bottleneck here. You hear it all the time when proposals come in. And if you only focus on rare proposals, for instance, how many times people say we're not allowing contingency because there are no risks on the project or we don't need a contingency. You can clearly see that there's a lack of understanding, but also a lack of sponsorship at that leadership level. Now, if we don't have that in place, then we can do three and four and even five. But the effect on the actual business outcome or the improved operational efficiency is not going to be there because you're going to have a nicely documented process that's supported by a policy and a vision, but nobody's going to follow it. And then when we look at the digital side of it, I think that enhancements, from a technology perspective, we could also really benefit from that. The ABW is not the right place really to be having your risk management module in it. It needs to be linked to ABW because obviously it's driven by certain organizational risk factors, but a more flexible technology that can also guide users on considering project specific risks and that we can really use as a proper risk management module that you can update during the project execution. I think that's where a lot of benefit is going to come from, because at the moment, your risk management is done at your proposal stage and then it's never looked at again. So it's not continued through your entire project life cycle the way it actually should be. So we do risk identification, if anything, we don't do proper risk management.

Speaker 1 (Sophia)

Okay. So it's at a very immature stage and then it's never actually followed up with. And when you mentioned, because in this case, I have leadership as kind of the highest c positioned people and you mentioned, okay, leadership is not supporting it, do you also mean that line managers are not supporting it? Or is it just the top?

Speaker 2 (Participant 2)

No, I think at the top we have that buy in is there, there's a recognition of the importance, but that's also only very recently swift, you know, swayed. But I think if you look more at your DBU and even more so at your DAG level, I think that's really where the sponsorship needs to be driven. But again, that is driven top down, that's not driven bottom up. So you've got sponsorship at your highest level, but they now need to drive that commitment and sponsorship at the levels below them. And it's just stopping there. I am not seeing it cascading and flowing through in a consistent and sustainable manner, at least. It's on a very ad hoc. So we'll get a proposal and then we'll be like, no, your risk mitigation plan is not detailed enough, but we're not really making sustainable inroads into actually changing that behavior at that leadership level.

Speaker 1 (Sophia)

Okay, yeah. And that's one of the aspects that I have identified as the digital transformation. And you believe that's one of the points that's missing within RHDHV is the consistency and really driving it, but also scaling it and improving it.

Speaker 2 (Participant 2)

Yeah.

Speaker 1 (Sophia)

Okay, interesting. And because of previous interviews as well, I've heard these kind of three towers, I guess, of technology processes and people that are kind of driving everything. But you also mentioned that we need more data and kind of making data driven decisions. Do you believe that data should be another pillar or should it be, should it fall under another or one of the existing pillars?

Speaker 2 (Participant 2)

I think it should fall under the existing pillar. I think you should, you know, it should maybe integrate into the process pillar because you start with your people. So it goes, people, process, technology. So who are the people and what are they doing? And then it's documenting what they're doing in terms of how they're doing. That's your process. And then from there you talk about, okay, well, what technology do I either need to enable that process or to enhance or optimize that process? Like I mentioned, if you just start with the process, but you might not understand the people or the culture, you might not be able to capture that, which means you just stuck with the process. And if you start with technology, which we often do, you don't necessarily understand the full process. So you might have a technology that doesn't really service the full needs of that process. So it's very important to take them in consultation with one another, but also in a chronological order so that you don't jump from one to another. Now, when we talk about developing your process, I think that is also where your data should come into play. So what are we currently seeing from the data? Not what do we want the process to be, but what does the data tell us the process is actually and documenting what we're doing and then looking at how we can optimize and enhance it. Your data can also, in a way, I suppose, also help you inform what technology you could bring in. But I think primarily the data would feed into the process and then tangent onto the technology bit for me.

Speaker 1 (Sophia)

Okay. Yeah. And the other part that I wanted to ask was, I've also heard that data used within the company is very independent, so there is nothing that's really linking them. Do you see that as a challenge as well, that we have data from different sources, but we're not really combining them or we're not really linking them in a way?

Speaker 2 (Participant 2)

Yeah, I think to a certain extent, I think it's because there are different data points, different data sources, we need a more comprehensive way in which to capture and actually analyze our data. I think that's one thing, and not just cherry picking from our data. So I do think having a more robust way of consolidating data and vetting and analyzing our data will really inform what is happening. Your data is also very important in terms of identifying what your actual behavior is like, so it informs what the adoption rate is. Are people following the process or are they not following the process? So one, I think having more consolidated and integrated data, but having more regular data reviews, not just at moments where we want to support a certain decision, but really looking towards your data to be able to make more informed, data driven decisions, I think that ensures that we are continuously checking ourselves and staying on track and doing the right things for the right reasons.

Speaker 1 (Sophia)

Yeah, if I understand correctly, it's more the consistency and the scalability and the improvement, and that's one of the challenges that we're facing as a company in general, from what I'm understanding.

Speaker 2 (Participant 2)

Yeah, yeah.

Speaker 1 (Sophia)

Okay, that's interesting. Do you have anything else that you'd like to add that I didn't touch upon?

Speaker 2 (Participant 2)

I don't think so. At this stage, I actually think you've done a really good job. I'm finding this very interesting. I mean, just reading the questions and stuff. It's very fascinating. I think it's a. I can't believe that something like this doesn't exist. I think you've chosen a really interesting topic because the more I'm working with the IMS also the more I can recognize that, like, digital maturity or digital transformation, maturity really does go hand in hand with your BPM maturity. Like, if we don't understand how we are doing things, what are we actually trying to digitize? What are we trying to automate? You're just going to have these fragmented series of digital technologies, but that's not really sustainable or adding any value in the long term to your business operations.

Speaker 1 (Sophia)

Yeah, yeah. It's more of working together rather than working against each other. Because in terms, people think that they're very separate, but they are linked to each other. Because if you're. From what I found is if your business processes are very immature and at, yeah, very kind of chaotic, then you're not really starting a digital transformation. You're still at the very early stages of, okay, what are we actually doing?

Speaker 2 (Participant 2)

Or then you're just jumping straight to the technology. But like I said, and you're just implementing all these digital technologies, but that's not digital transformation because that's not sustainable and it's not going to bring efficiencies and economies of scale and improved operations to your organization.

Speaker 1 (Sophia)

Yeah, because moving everything from a document perspective to automating processes and online and putting everything in a system is actually another concept called digitalization, which a lot of people use it interchangeably with digital transformation. And that's actually why I wanted to get a common understanding of the concept of a digital transformation and how it's used in this research, or in my research specifically, before jumping into, you know, everything beforehand.

Speaker 2 (Participant 2)

I think that's really, really important because I think a lot of people when they do see digital transformation, they really just talk about, well, they think about it, like you say, as a move from document to digital or online, and that is digitalization. Although it factors into your digital transformation, it's just like a fragment. It's not, that's not what true digital transformation is. It's really seeing how you can redefine your business ways of working and implement your digital technologies to really facilitate that continuous growth and development and enhanced efficiencies.

Speaker 1 (Sophia)

Yeah. Do you have any feedback for me on the interview?

Speaker 2 (Participant 2)

No, I think it's a very well prepared interview. I think it does help to share the questions and materials up front.

Appendix D - Interview with Participant 3

Speaker 1 (Sophia)

Yeah. So, hi, again. Thank you for taking the time to do this interview with me. So, a little bit about my project. I think maybe you know a little bit about it, but just to reiterate, I'm looking into digital transformation maturity models and how they are stacked against BPM maturity models. So currently in the academic world, I have not really seen any of these models and how the two concepts are related. So I would like to see whether there is an actual connection or yeah, I'm just kind of throwing ideas out there. So if you could introduce yourself and what you do in the company and how long you've been working at the company.

Speaker 2 (Participant 3)

My name is Participant 3. I'm corporate director, operational excellence and risk management, and as such, responsible also for the whole quality management system. And at this moment, one of the major projects that we are running is called the IMS project, where we are going to transition from a documented based quality management system to a process based quality management system.

Speaker 1 (Sophia)

And another follow up is, are you aware that there's currently a digital transformation project that's going on within the company?

Speaker 2 (Participant 3)

Well, basically, I would not call it a project. It's a strategy that has been rolled out and with that come multiple projects. But yes, I'm aware of that.

Speaker 1 (Sophia)

And for you, when you think of digital transformation, what are the key concepts or words that come to mind or how would you define the concept in your own words?

Speaker 2 (Participant 3)

Well, first of all, we are an engineering consultants company, so we are not a software company. So that should be separated from each other. So the digital transformation should be of added value in the way we work and the way we deliver our products to our clients. So it should be beneficial of added value, but also in the end, lead to sustainable solutions so that we become also a robust company for the future.

Speaker 1 (Sophia)

Okay. And in my experience, I did not find a good enough definition that I would be able to use for this research. So I've kind of combined a couple of researchers previously about what they believe that digital transformation is. So this is kind of the definition that I came up with. So, digital transformation is a strategic and sustainable initiative concerned with the redesign of business and operational models. It

entails creating value and enhancing user experience by leveraging digital technologies, key resources and capabilities. Would you agree with this definition? Is the language used here clear enough? Is there something that you don't agree with or something that you think, you were surprised by?

Speaker 2 (Participant 3)

Well, I think this is in line with what I just was saying. So in the end, it will redesign a bit the way we do business, I don't know how operational models are, what parts will be affected, but it will definitely have an influence on that and will be contributing to in the end, that people and the way they work are supported by more digital technologies. So when it comes to people process technology, that is in line with that and what I said, it needs to be sustainable, so it needs to be in such a way that it will lead to a more robust future for the company. So I think it's all in line with what I just said. This is what it entails.

Speaker 1 (Sophia)

Yeah. The only thing that I'm kind of hearing that was a bit different is that I also included the resources. So in this case, I mean, the people that are working on it. But indeed, now that you mentioned the three pillars of technology, processes and people, I think it was the third one.

Speaker 2 (Participant 3)

Well, first people, then the process and then technology. I don't know, maybe in the future that will change. But I'm a strong believer in that we are building it around people, processes, and technology is an enabler for the people to work according a certain way. So I don't... let's put it like that. I am not in favor of technology taking over in that case.

Speaker 1 (Sophia)

And do you believe that Royal Haskoning is currently doing it in that way? So they're being guided by the technology?

Speaker 2 (Participant 3)

No, no. Well, sometimes we are, but basically we follow the principle of people, process, technology.

Speaker 1 (Sophia)

Okay. So a little bit to go on a little bit about maturity models. So there was not really a model that I was able to find that encompassed digital transformation and business process management. So this is one of the models I took. Yeah, I took from previous research. So you have the capability maturity model combined with the digital transformation model. Is this something that you've seen before or...

Speaker 2 (Participant 3)

No.

Speaker 1 (Sophia)

Okay. So what I've done is actually, if we're just going to take a look at the right hand side. So just the maturity levels of digital transformation here is a bit more detailed overview of what each level encompasses. But, yeah, so these are some of the criteria that need to be met in order to reach a specific maturity model. So if I make the statement that RHDHV belongs on level three, which would be managed and do you agree with this or. Sorry, it's going to be established, do you agree with this statement and then why or why not?

Speaker 2 (Participant 3)

I think it's more hybrid, I believe. I think at some points we are probably at three, but at other points we are also still at a more second layer level. I think when it comes, for example, to the third point of layer two, we can say, well, that's not completely in place. We have an overview of our enterprise architecture, for example. But is it a complete functioning system and do we know how everything interacts with each other and is everything documented in the right way? I doubt that is in place. So I think where we are coming from is more what I said, it's more managed way, and I think we need to move into a more way of becoming at least predictable. But that's a long way to go still. So somewhere between two and three, I think.

Speaker 1 (Sophia)

Yeah. And if you had to pick one, would you say that we're more towards two or three?

Speaker 2 (Participant 3)

What do you mean by.. you need to explain to me a little bit more what you mean by vertical integration and networked manufacturing systems. What do you mean by that?

Speaker 1 (Sophia)

Yeah. So vertical integration would be more of, from how I understand it personally, is kind of the layers on top of each other. So you have the very immature processes that are integrated with more of the mature processes. So that's what I would quantify it as.

Speaker 2 (Participant 3)

Yeah, it's difficult to choose, I would say more two than a three, but that's, you know, you ask me how long I'm with the company. I didn't answer that. It's only five months. So for me, it's difficult to give a right judgment on this.

Speaker 1 (Sophia)

Yeah. But based on your experience, you would say more of two. And what you've seen so far, in your view.

Speaker 2 (Participant 3)

Yeah.

Speaker 1 (Sophia)

All right. So as I said previously, I've not really seen any models that show the overlap or the kind of correlation between digital transformation and BPM maturity. So what I have come up with is a quadrant type model. Across the horizontal we have the digital transformation maturity from level one to level five, as we've seen in the previous diagram. So kind of that criteria. And then we have the business process maturity and from low maturity to high maturity. Where low maturity, I define as where processes are informal, undocumented, there's no standardization or KPI's that are used to define the performance. And with high maturity being standardized processes, improvement and data driven collaboration, or like cross functional collaboration. Where would you place RHDHV to your knowledge right now?

Speaker 2 (Participant 3)

At this moment, I would say, based on what we discussed previously, that we are in the orange box.

Speaker 1 (Sophia)

Okay.

Speaker 2 (Participant 3)

But let's say on the higher. Well, when it comes to the digital transformation. So that's around say six and a half. And the business process management, basically we are not doing that. Yes, we are creating now workflows, but having an ownership organization, that is one of the things that is not in place. Continuous improvement we do, but it's not structured in a very well way. We have not a real... we don't measure on real performance KPI's when it comes to the contribution of certain processes to strategies or whatsoever. So we do a lot of things informal, not formal. So yeah, that's why I say we are more in the orange box.

Speaker 1 (Sophia)

Okay.

Speaker 2 (Participant 3)

And the project that we are undertaking, for example with the IMS project, the end status is that we really go into applying business process management. But the first step is modeling the processes in an interactive way. And then the second step is, you know, defining the whole process organization that comes with that. Third step is when we have established that, define how we take care of continuous improvement and innovations within that cycle. And then again, another step is, okay, the owners, the process owners, how are they going to measure the effectiveness of their processes? Which tools do they have for that? Like internal auditing or the KPI's? But if you have KPI's, how are you going to measure these? So we are far away from a high level maturity.

Speaker 1 (Sophia)

Yeah. And that's the intention with the current...

Speaker 2 (Participant 3)

That's the intention, but it's a long way to go. Yeah. That requires really, that's a real big cultural change for the company as well.

Speaker 1 (Sophia)

So you believe that culture is something that's also affecting this model but that's not modeled here?

Speaker 2 (Participant 3)

Yeah, yeah. A lot.

Speaker 1 (Sophia)

Okay. So looking at the model again, I have indicated the ideal scenario indicated by the company logo, and I have made a checklist with a corresponding artifact for each item, which I believe that needs to be completed or at least in place for it. And I've prioritized it according to a top top down approach. So first we have the clear vision and strategy. So that's a vision statement and an objective. Then we have leadership support, which is a stakeholder engagement plan. We have that the business processes are compliant with industry standards and internal policies. So that's a mapping of the process to a standard and the compliance status. Then we have the business processes are well documented and structured. So that's the flowcharts that you mentioned, the standard operating procedures based on the processes then we have an ownership within each step. So that's a RACI matrix or whichever other.

Speaker 2 (Participant 3)

You need to define the ownership and with that comes a RACI for certain things. So, yeah, but the organization, you know, it's not only ownership, it's a whole governance organization that needs to be there, because if you're owner of a certain process, to who do you report? To whom are you accountable? So it's also governance that needs to come with that, for example. So it's more than only ownership, it's a matter of how are you tying everything up together so that you also have accountability with that.

Speaker 1 (Sophia)

Okay. Yeah. And then you have the KPI's with the success metrics. And lastly you have the culture of continuous improvement and scalability. So that's looking into retrospective meetings and reports. Do you believe that this checklist is complete or would you add something or shift around the priorities? You already mentioned that ownership should move towards governance rather than just ownership, because governance also entails the reporting structure, so to speak.

Speaker 2 (Participant 3)

Yeah, that's one thing. It's not only leadership activity. I'm thinking ownership is governance, it's ownership, but it's also networks. It's also networks because you can dictate from the top, but then you

create a lot of resistance. So you need to involve the workforce. So the actual employees, we need to work with that. And that requires networks, functional networks, on knowledge basis, so that you are also able to start the improvement or the innovation cycles, but also are able to implement them in the right way. So it also goes with implementation and training and learning those kind of things. So it's a whole mechanism around improvement that is required. What am I else missing? So, yeah, leadership, of course, needs to be supported, needs to support, otherwise we all go in the wrong direction. When you say compliant with regulatory requirements, does that mean that, does that include legislation, country legislation?

Speaker 1 (Sophia)

Yeah.

Speaker 2 (Participant 3)

Okay. Well, what is important with step three, and that is one thing that we have established, that is also that you have the governance in place of how your business process environment looks like. So you're going to map the processes, but they need to be captured in a certain way in your quality management system. And it is important that there is consistency in that. So you need to have a governance in place that dictates where your process is captured in the system. And so what we did, for example, is that we defined three main groups like governance type processes, operational type processes, and business enabling processes. And within the last two, we have made also the distinction between that you have company wide processes and targeted group processes with the influence of, for example, local legislation and those kind of things. And when you have that structure and when you then start producing the flowcharts, then you also know where you can accommodate that within your framework, within your governance model.

Speaker 1 (Sophia)

Are there overlapping processes then that they can belong into more than one group, or do you have to put them in one specific group?

Speaker 2 (Participant 3)

And now we want to have them as much as possible in one specific group.

Speaker 1 (Sophia)

Okay. And how's that division made?

Speaker 2 (Participant 3)

Yes, yes. So the governance around the quality management system and the governance around the ownership organization, that decision has been made now, and that is really the foundation for the project to be moving on forward. If you don't have that in place, then you cannot structure it further because then you are producing a lot of content, but you don't know where to capture it. And then you are not

able to make it available to the people in the right way because in the end, you need to look at from the user perspective, and that is the employee. And the employee needs to see, okay, with a certain level of training and explanation, this is logical and I know where to find my ways of working. I need to know where I can find that. Where do I need to go into the system and are able to drill down to find it. So that is really important that those things are in place.

Speaker 1 (Sophia)

And this is more of a top down approach. What is your opinion on doing a top down versus a bottom up kind of checklist and prioritization?

Speaker 2 (Participant 3)

Well, in principle, you need to do things simultaneously because, for example, the mapping of the processes you can already start doing without having all governance and those kind of things in place. So it's basically, of course, you need to think about certain things, to avoid redo. But in the end, you can do both a top down and a bottom up. And by also having the bottom up in place, you create more.. how do you say that? You create a higher adoption level in the end.

Speaker 1 (Sophia)

Okay. Yeah. So there's less resistance.

Speaker 2 (Participant 3)

Yeah. So for example, what we did is that we started off with mapping some crucial flows that are applicable to all employees. And we have appointed, throughout the organization, subject matter experts and those were involved in establishing the workflows. And then you create a high level of adoption in the end when you want to start implementing that, because you have your front runners already involved in the whole process. So that's very important. And the other thing is, and that's what I'm missing but it's more from a project perspective. You need to really have strong communication and sponsorship, sponsor ownership in place and you can call that stakeholder engagement plan. But it's also that you have consistency in the way you communicate that's really important so that you have the right tone of voice, those kind of things. So that is really important to also have that established at the very front end.

Speaker 1 (Sophia)

And where would you put that item?

Speaker 2 (Participant 3)

Well it's more stakeholder and communication plan. So I would combine that really is in place and that you also have, and that you have, for example in our intranet we have a location in place very soon where people also can see the progress of the project so that you are able to... So it's also about, yeah, it's communicating in a lot of ways to your stakeholders and you need to have that in place in a very good way.

Speaker 1 (Sophia)

Yeah. And because we talked about the level of maturity of RHDHV being around between a two and a three, most likely a two. Where do you think that RHDHV needs to improve in this kind of checklist or where do you think we're kind of stuck in a way?

Speaker 2 (Participant 3)

Well you know this checklist and if you want I can show you another list that we are using in this process. But in the end it's not a matter of being stuck somewhere. It's just a matter of that this is, you know, a cultural change. So this is not done in one day. To be honest this takes years. Because in the end we are a quite complex organization. We have a lot of business lines, global leading markets, we have 6000 employees. Everybody has his own opinion. So if you want to go to for example to more standardized way of working then it requires a lot of stakeholder management, engagement, alignment and it takes time. So it's not a matter of are we stuck somewhere? No, we are addressing a lot of things at the same time and we are making progress but it takes time to improve on this maturity grid.

Speaker 1 (Sophia)

Yeah. So from what I'm understanding there's kind of an overarching theme of timeline but also cultural shift, well identification and then shift.

Speaker 2 (Participant 3)

Yeah. Let's be honest, we are a company that is coming from a very high level of freedom for the people, doing it very much on their own way. And to be able to also make the roads free for digital transformation you need to increase the level of standardization and that is really cultural change because people are not used to standardization of the way they work. They basically have a lot of freedom and are allowed to do it in several ways. And we want to consolidate that in one way. That takes resistance to overcome and takes a lot of communication, alignment and so on. So that takes time. And we take that time because in the end, if you rush and if you push it down from the top, then it will not succeed. That is my experience because I've run such a project before.

Speaker 1 (Sophia)

Okay. Because I don't really have one of the steps of it being standardized, but it's more of a documentation. Would you add it as another item kind of in the checklist or one of the things that needs to be in place.

Speaker 2 (Participant 3)

Okay, well, I would add that in. Well, in the end you put it in four. You have standard operating procedures. So basically the workflows, they are the blueprints for the way we work. And that is a standardized way. And yes, that is up to, let's say 80% because then the other 20% is more the local legislative requirements

that need to come in. So what we will do is that we will have that last step that is up to the country environment to add that. So I think you have it in there, but it's hidden a little bit.

Speaker 1 (Sophia)

Yeah. And just to clarify, how do you differentiate ownership versus governance? Because you mentioned that ownership is not really the definition you would use here, but how do you differentiate those two terms?

Speaker 2 (Participant 3)

Well, governance is really the whole structure on how we will manage our ownership. So basically it's telling you, so the whole governance is telling you - okay, we have these kind of processes. With that come these kind of owners and with that we will also give them a certain role mandates in the organization, but we also expect something from them when it comes to monitoring whether their processes are effective and are of added value. So then the internal auditing and the KPI's come into place. So that is, for me, that is all part of setting the governance for business process management. And the ownership of processes is one of the levels.

Speaker 1 (Sophia)

Okay. And how do you think that data is coming into place into this? In terms of being in the, in Royal Haskoning in particular, are we doing well in terms of our data management or usage? In terms of making decisions and storage, I guess as well

Speaker 2 (Participant 3)

That's for me, it's difficult to judge when we are talking about creating the quality management system and we are using for that business process management, then we are creating the blueprint. And in the blueprint you are not going to manage projects, for example, that is in a different environment. But in the end out of that environment you want to have your lessons learned, for example. And that again needs to be brought back into the quality management system. But you can imagine that when you are doing your work and you are going through the several activities or steps that you have to go through, then you can discover that certain steps can be automated. For example, especially if I would go into product management environment where you have a lot of product management processes, then there's a lot of these you can automate and really take advantage of our process flows, how we envisage to work and next to that, having an automated system in place and where you can also then use the processes to optimize your automation. So is it a thing that is already in place? No. Is it something that is in mind, is in sight? Yes. And how that exactly will be deployed, I don't know yet

Speaker 1 (Sophia)

Okay. I think that was it with my questions. Do you have anything else that you'd like to add that I didn't touch upon?

Speaker 2 (Participant 3)

No. I'm curious to find out what in the end, what the end result of your survey will be, how others look like it. As I said, I'm only five months with the company. We are running a big project. We are doing a lot of things simultaneously. So others have different views, look at from a different perspective. So I'm curious about how everything fits together.

Speaker 1 (Sophia)

Okay.

Appendix E - Interview with Participant 4

Speaker 1 (Sophia)

So once again, thank you so much for taking the time to participate in this interview. If you could introduce yourself a little bit and how long you've been at the company and your position in the company.

Speaker 2 (Participant 4)

Yeah, yep. So yeah. Participant 4. I've been with the company for over 15 years. My background is I have a degree in civil engineering and I'm a chartered structural engineer. Most of my career with the company I've been an advisory group director, mainly an engineering group and then a project management consultant, CAG. And then about four years ago I became the project excellence manager, supporting various organizational changes, but with maritime and used to be maritime and aviation and now maritime and water. So I support the business line, water, maritime, and also work on delivering group projects as well. So I'm a project manager. So yeah, quite a varied role. So helping the business line with proposal process, so I participate and help chair the Wincom process, so anything that the business line director needs to sign off or that will end up with the risk advisory board comes to Wincom. So we see all the proposals that are sort of higher value, higher complexity, and also help well do the health check process as well for the business line. So we have like 80 projects that I have to speak with project managers every month to find out what's actually happening with their projects and try and mitigate the risks through execution to help keep clients happy and deliver the quality on time, get paid.

Speaker 1 (Sophia)

So a very diverse role. So you have a lot of knowledge within the company, but also, you know, outside as well. To start off are you familiar that the company is currently having a digital transformation initiative?

Speaker 2 (Participant 4)

Yes.

Speaker 1 (Sophia)

And for example, when you think of a digital transformation, what kind of keywords or concepts would you use to describe a digital transformation yourself?

Speaker 2 (Participant 4)

So I think it's like, I mean, we're engineering engineers and consultants basically, isn't it? So we provide services. I mean, we don't deliver products as such, although drawings and documents are our main deliverables, but clients pay us for our advice, our expert advice. So in terms of digital transformation, for me it's more around how do we look at the processes in which we go through to deliver those drawings, documents, the checking, reviewing, everything else that's involved with that and kind of look to see where we can automate some of that. So if it's like engineering design, like we know we do modeling in BIM 360 now, so we can do all clash detection and everything else generate models, but from a design

perspective, can we write a script so we don't have to sort of sit down with our books and pens and design things manually. Is there a way in which that can be done automated and then from proposal perspectives? So looking at AI is the ways in which we can use AI to help create content, answer the questions of, you know, find out how best to respond to the client brief so we can use digital mechanisms to be able to do that. So, you know, python writing scripts and things like that for engineering design using artificial intelligence. So I think they're the main things that I see that we're doing, like, and the modeling side of it as well. So they're the main things I see in our business that we are doing and want to do more of. So take out the mundane aspect of what we do and use our minds to do the thing, you know, what does it mean to be human, you know, and as a project manager, you know, there's this interesting topic around what is the role of a project manager in the future? And actually, because it's all about stakeholder management, dealing with people, you know, whether actually the digital journey will change that platform for them or not going forward.

Speaker 1 (Sophia)

So for the purpose of this research, there's a lot of definitions of digital transformation that are out there in the academic world. So I could not find something that really fit my research. So I combined a bunch of definitions to come up with this one. So digital transformation is a strategic and sustainable initiative concerned with redesigning business and operational models. It entails creating value and enhancing user experience by leveraging digital technologies and key resources and capabilities. Because you mentioned mostly about technologies and digital aspects and getting rid of mundane tasks, is there parts of this definition that I've shown you that you agree with or disagree with?

Speaker 2 (Participant 4)

Is it the redesign of business and operational models, or is it redesign or is it like. I'm not sure if it's redesign. It's. I'm trying to think. I don't know, I think longer, maybe in time, but I'm not sure whether that is the right way of defining it because you still. Yeah, you still need to deliver the outputs, but the way in which you do it is that is enhanced by digital tooling or whatever it is that we're embracing. So, I mean, ultimately is tooling, that's what we use as a business. It's the tooling that we use to be able to help us save time. We can. Obviously, then whilst we stay ahead of the curve, we can make more money potentially, because we can do things for less time. So it's a commercial proposition. I mean, that's the root of, like, what we do as a business. We want to do this journey because there's a, we don't want to be left behind because otherwise we won't be as commercial as our competitors. So I think from a business perspective, there's also a commercial spin on it that you can't ignore, you know? You know, that's the fear that if we keep doing things manually and don't embrace digital transformation, we will. Yeah, we'll be priced out of the market. And also we need to evolve because, like, if our clients have been, are able to do what we can do, they're not going to come to us to pay for it anymore. So it's like, okay, what is it then that they value our time for? You know? So I think it's that commercial proposition, staying ahead of the curve type thing that I would probably try and weave in somewhere. If you're looking at our business, I mean, that's. Yeah, it's generalized or not, but. Yeah, but from a business proposition perspective, it's always got to be a commercial advantage, hasn't it?

Speaker 1 (Sophia)

And then here I've also included the resources. And when I mean resources, it's our employees and their skill set. Do you think that's an important part that needs to be included?

Speaker 2 (Participant 4)

Yeah, I mean, we. So we have like a DNA, don't we, within the company? We're looking at Haskoning. You're asking about Haskoning. So we've come from a history of always doing the same thing. And, like, for the next generation, it's a lot easier for them to embrace, like, doing things differently than maybe it is senior generation, because people don't like change. So it's about helping them to see, actually they're not going to be redundant because we're using these technologies. We need them for doing XYZ, or they still need to have a review over, you know, what's going on. I think people fear. People fear that they're just going to be no longer required because digital enhancements are going to replace them. And so I think that's where, like, as a business, we struggle a little bit. We talked a lot about that in the leading Stronger25 training that we did with the DAGs and the fear factor. So I think in terms of enhancing user experiences, yes, but you also have to recognize that you have to address the "What's in it for me?" You know, how do people respond to that and the resistance that you get is because they're fearful about the future and whether they're gonna have a job or not.

Speaker 1 (Sophia)

So it's a bit also of pushback, but also, how do you introduce the change? Okay, and what do you think that change is kind of rooted in? Is it just the type of culture that we have or?

Speaker 2 (Participant 4)

Yeah, I think inherently we're not. I think as people when we don't generally embrace change. I'm a change practitioner as well. I've had the pro site. So anything new that you introduced, because I've introduced new projects to the organization as well. So anything that you introduce new, you have to very much bring them along on that journey. You know, I don't know if you're familiar with change management, the ADKAR method, but, you know, the awareness, desire, knowledge, ability, experience. So. And when were on the leading stronger 25 training. Yeah, we were talking about, so what does this, you know, the role of an engineer? You know, I'm an engineer by training, but what does the role of an engineer look like in the future? And, you know, what do we want them to do and what's that going to look like? And so I think, yeah, like I said, with new people coming in, it's much easier if we have a strong story behind that to just bring them into that way of working because they don't know any different and they're already, like, a bit ahead of the curve because they're, you know, next generation and cover these topics at university and whatever. But, yeah, anyone that's kind of like, I would say maybe, you know, 30, 40, 50 upwards, it's going to be like, wow, this is quite, you know, different. What do you want me to do now? And you're always going to have some people that are completely motivated, inspired by embracing, like, what they can do with the digital transformation. But I would say for the majority, you know, you've got very expert people. It's not in their nature to want to be innovative because they, if they're designing engineers that are designing structural solutions, they follow a formula so that they know that it will stand up and it's not

going to fail. So, you know, you have to say to them, well, that's great, but we want to look at a different way. And they're all going to get a bit kind of, like, panicked by it, I think. So, you know, the way in which we take them along, I think, is, yeah, is really important because a lot of older people in the business or not, everyone's like, in their twenties, you know, we have a lot of people, you know, thankfully in our business that stay and work here for a long time. I've been here 15 years. It's the longest I've ever worked for a company. I've only ever been like maximum five years before at different jobs, though, in this company. So a lot of people have been here 20-25 years, 30 years. So we have to be mindful of that, how different people react to this digital transformation.

Speaker 1 (Sophia)

Okay, thank you. So in this research, I'm looking at digital transformation and business process management maturity models. However, I could not find an existing model. Therefore, this was a little bit of a close model that I was able to find from 2022. And taking a look at the right hand side, we have the maturity levels from initiated to innovative. Have you seen this model before?

Speaker 2 (Participant 4)

No, not like this, no.

Speaker 1 (Sophia)

Yeah. So if we take a look at the only. At the right hand side, this is a little bit more detail of what it entails, what each level entails from zero to five.

Speaker 2 (Participant 4)

I can't see it very well. Just making it bigger. Yes. Let's put it on my big monitor, I think the side of my head.

Speaker 1 (Sophia)

Yeah. So if I were to make the statement that Royal Haskoning as a whole, not a specific area of the company, but as a whole, would be at a level three, would you agree or disagree with this statement and why?

Speaker 2 (Participant 4)

I think it's almost like you'd have to color this up like red, amber, green. I think for each of those stages, because some of them you would say, yeah, green. Yeah, yeah, we're doing it. But I wouldn't say that we're doing everything in all of those stages up till three. Okay. You know what I mean? So, like, yeah, greens, we're doing. Amber's a bit off. Red. Not really. So, yeah. So we're definitely past naught. So trainings are required for workforce skill improvement. Question mark. Is that. Is that right? I don't know. I mean, I know. I think we've got a digital academy, but I'm not sure, like, going back to what I was saying about, you know, the whole change management process not everyone's going to be designing in Python. I mean, that's just not realistic. So. So what. What do we mean by that? I'm not sure. Skill improvement? Yeah, I don't know. Question mark. I'm not sure whether we do that properly. The roadmap for the

transition to digital transformation is developed. I don't think it's clear to me. Pilot studies are conducted. Physical items are started to be represented by virtual world standards guidelines. So we do. We do. You know, I know that we do. You know, we've got designs, engineering designs that are automated and I've given you some examples of what we're doing. What's the EA layers?

Speaker 1 (Sophia)

Enterprise architecture.

Speaker 2 (Participant 4)

Oh, well we're getting into grips with that but it's not done. Okay.

Speaker 1 (Sophia)

And if you had to place it because I see that you're considering level one and two. If you had to place the company in one of the brackets, would you place it in one or two?

Speaker 2 (Participant 4)

Because you sort of wrote three. Did you?

Speaker 1 (Sophia)

That was just a statement from what I've seen.

Speaker 2 (Participant 4)

Well I don't think we've got, if it's building blocks, we haven't got enough of two done to be fully at three. So there might be elements of three that we're doing. But for me like you have to have it all green as in it's ticked, it's done. To move on. So I think sometimes we just need to get the foundation. Yeah. The foundation stones better before we can then move up. You know, like if it's a pyramid type thing. So I'm just giving you my opinion. So it'd be somewhere in two and where we're working on getting to level three. Three, I think because there's not enough of two.

Speaker 1 (Sophia)

Yeah. And yeah. Before I show you the model that I have proposed, what's your experience with business process management and maturity models in business process management?

Speaker 2 (Participant 4)

I've not looked, I don't know what you mean by what's my experience with it.

Speaker 1 (Sophia)

Yeah. Like have you worked with it before and do you know kind of what it is? Are you part of the initiative?

Speaker 2 (Participant 4)

The. I think. Oh, IMS. Yeah. Yeah. So yeah. Well I'm not like on a day to day basis I'm not part of it. But I have a reviewing role of all project management processes. And I was working, I mean one of the direct reports was working heavily on that for a long time. So. No, I think it's good. So like. So on a holistic level then in terms of our business, what you see is we work in silos. And that is something the business has been trying to tackle for a long time. Actually, we have even bigger AGs than we used to have to try and break down silos. So we're very diverse in terms of the services and, you know, what we offer. But at the same time, if you can't come to a common ground in the way that we do things, you know, to recognize that we do things actually the same, then there's no way you can automate that. So that's what we struggle with a little bit. Everybody thinks that they're unique and they need to do everything in a different way rather than seeing that. Oh, yeah. You know, let's take the best practice of everything that we do and let's make that the process. There's not necessarily a big desire that everyone was not like jumping forward to sort of recognize that and make that happen. And I think that comes back to the DNA thing I was talking about. People just like to do their own thing and they reinvent their own wheel every time. Then that's what they're going to do and no one's going to tell me that I'm going to do it differently. There's a bit of culture involved with this, of course, because the Dutch are very different to other cultures in that respect.

Speaker 1 (Sophia)

And that is one of the kind of residing factors is that with multinational companies it's very hard to pinpoint.

Speaker 2 (Participant 4)

Yeah. So, like, Dutch culture is generally. It's not. You're not going to tell me top down what I'm going to do. I'll do what I need to do and you're not going to, you know, not going to change my mind. Tell me different. So whereas the UK is more hierarchical, so if someone says this is what you need to do, they go, yeah, okay, I'm going to do that. And another nationalities are the same, so, yeah. Culture makes it more complex and in that respect. So I can't remember where were going with a question, but yeah. So what was the question? You must be, well, what's my experience of it? Yeah. So I'm completely familiar with processes. I've been working on processes, you know, reviewing them. Yeah. So all the steps that you need to take, you know, to get from a to b to create. Yeah. Whether it is like checking, reviewing and approving, which is the one that I've been quite involved with, you know, reviewing the startup processes or whatever it might be, but more like. Yeah. From a project management perspective than an engineering or consultancy perspective. That's where my. Okay, yeah.

Speaker 1 (Sophia)

Leads to my model because what I have not found, as I said previously, is no models that really map the correlation or between digital transformation maturity from level one to five, which is the levels that we just looked at against business process management maturity. And in this context, I take low maturity as where the processes are very undocumented, unformal. There's no standardization, there's no KPI's. And

you have the high maturity, which is kind of the opposite, basically, with data driven decisions and cross functional collaboration, because we identified RHDHV as level two. Where would you map RHDHV? In which box would you say that we are currently.

Speaker 2 (Participant 4)

Gosh. So the thing is, like, we're doing, like, we're moving leaps and bounds at the moment, but, boy, is it hard work. So the whole business process maturity. And we've come from like, not mature whatsoever. So, you know, whole different, either not documented processes or three different processes for the same thing, you know, like chaos type situation. What we've been working on, like, for the last probably two years is trying to. To get that documented and like I say, have a common, identify where we should be doing things the same. Let's start with that. And then, of course, in the business lines, there'll be business line specific processes and even ag processes. But let's recognize that there's some things that we do the same. But that's hard. That is really hard getting people to see that. So when they were interviewed about the way that we work at the moment, a lot of people had a lot of negative things to say about it. So you would think, oh, we're pushing on an open door. So the willingness and the desire to actually do something different would be high. But actually it's not because I think a lot of people see it as you document a process that you say, this is what we're all agreeing to do, that removes their autonomy to do something different. So in terms of where we are, to answer the question. So maybe we're between the orange and the purple.

Speaker 1 (Sophia)

Okay. Bottom half.

Speaker 2 (Participant 4)

Yeah. Okay. And I agree with you. You can't get the digital transformation maturity without having the process maturity first.

Speaker 1 (Sophia)

So this was kind of my interpretation of how the two are connected. This was the best representation I could, because the quadrant gives you a little bit of, okay, it's a higher to the right orange or a lower purple. So gave a bit more flexibility of, you know, where it could be.

Speaker 2 (Participant 4)

Matrix is always a good way of doing it, isn't it?

Speaker 1 (Sophia)

I think, yeah, because I looked at most models are very linear and it's saying, okay, you need to just like the one I just showed, the digital transformation maturity model. You have to be in one or the other. There's no kind of in between. Like, okay, I'm somewhere here, but not there yet. That's what I was struggling with, but, yeah, so this is the ideal scenario. We would like to have a very high digital

transformation maturity, but also a BPM maturity model. So I indicated it with the logo of the company. So what I've done for the purpose of this research is kind of made a checklist of items that I believe that need to be within the company, that need to be completed, but also the artifact or the tangible item that goes along with it. I've prioritized them from a top down approach. So first, starting with the vision and the strategy, then leadership actively supporting it, business processes, compliance with industry standards and internal policies, and then we have documenting the processes and when they're documented, the ownership. So the RACI matrix in this case, and then having established KPI's and a culture of continuous improvement moving forward. But yeah, at a certain point. Do you agree with the list and the priority?

Speaker 2 (Participant 4)

Yeah, I mean, it'd be good for me to spend a little bit more time looking at it, but I think the principles behind what you've done, I think is good. It's like coming back to that kind of building block thing. You have to have the. The foundation stones are in place before you can kind of move to the next level, don't you? So there has to be. I think it's like the DAGs play quite a massive role and they have a lot of things on their plate as well. So, like the leading Stronger 25 training, I think it was really good for this sort of thing. But then, you know, people get stuck back in their day job and the whole, you know, like I said, we have very big AGs now. You know, we have like 40 to 90 people in an ag sort of thing. So. So people. The feedback from employees is that it responds more to, like, their line managers than they would like. More kind of top down, like for Marije or somebody, or like for me, communicating, maybe because I'm in a corporate group. But I think that all the strategies and leadership things, people have to believe from a change management perspective, believe that this is the way that we're going. Otherwise, you can't convey a convincing message. You're not passionate about it enough, and then you also have to be able to translate that into what it means to the individual employee. That, don't you? So I think it's right, but I think there's like, if we go from experience of how we do things within the organization, we shouldn't skip that and we should make sure that the message is landed and, you know, people are doing things differently and, you know, there has to be ways in which you can, like, pulse check it because otherwise it just, it's just another thing on the list. You know what I mean? So how do you fully embed it is? I think if we knew the answer to that, we'd probably be all in a different position right now, but from the digital transformation perspective. So it's hard. It's hard, yeah.

Speaker 1 (Sophia)

And where do you think that us as a company, we are struggling in? Which kind of item or where do you think that we could improve?

Speaker 2 (Participant 4)

So I think it's all very well top down sort of saying this is what we're going to do. But, you know, I kind of talked about autonomy before, but, you know, if a line manager thinks, yeah, that's fine. That's not priority for me for now because I measured on my AG's performance, P and L, you know, whether they're going to make any profit or not. So I'm going to focus here. I just decided to do that. So it's not like people have, they interpret it and do things differently to suit what they think they need to do to be successful as an

AG. And that's what I'm saying. They have to, like, fully believe the importance behind what we need to do and where we need to get to. And maybe it needs to be more bite size also in terms of, and very, it has to be very translatable to the employee, individual employees. So what does it mean for you? What are you going to do differently in your job? And then that has to be supported by the line manager. But there should be those kinds of discussions because everybody's responsible for it, aren't they? And, and I don't think that fully happens. I don't think it happens. And when I was with the DAGs in, so we did that in like November last year. So fairly recently, you know, when I talked to them about how we talked a lot around this kind of topic because we had people from the digital business line also DAGs from that business line in the group, and that's where they struggle the most. So.

Yeah. Make sure it's not too glossy, if you see what I mean. It has to have substance. Yeah.

Speaker 1 (Sophia)

So it's from what I'm understanding, it's more of a combination of a top down and a bottom up approach at the same time.

speaker

Speaker 2 (Participant 4)

Yeah. It's almost like you do have to set targets around achieving something within the AG, but if you just set a target and it's a bit hollow, like, oh, we've just got to tick a box and make sure we've done this, but we don't really think it's the best thing for us, then you're kind of missing the point, aren't you?

Speaker 1 (Sophia)

Yeah, there's no supporting evidence.

Speaker 2 (Participant 4)

It's just, okay, we have to do this and someone is telling us it's always the. What's in it for me, you know, why. Why is it that I should do this or do something different or. Yeah, so, yeah, so we need.

Speaker 1 (Sophia)

More of an individualism and autonomy. Yeah, yeah.

Speaker 2 (Participant 4)

And even, you know, you could look at it by role type. You know, we have lots of different role descriptions in the organization, so you could even, you know, think about. Okay, so for the CAD technicians, what does it mean, you know, for the structural engineers, the civil engineers, you know, industry and buildings or water, maritime, you know, or. Yeah, developers, what does it mean for them? What does it mean for project managers? You know, maybe, you know, it's easier to then relate it if you make it like, role specific. I don't know.

Speaker 1 (Sophia)

And would you add this as another item, for example, in the checklist too? Add more of an individual touch.

Speaker 2 (Participant 4)

Yeah, definitely.

Speaker 1 (Sophia)

Okay. And where would you prioritize it, for example?

Speaker 2 (Participant 4)

So I don't know where it sits in here. So, like you've got. Ownership is established for each step.

speaker

Speaker 1 (Sophia)

So, yeah, this is referring back to the business processes. So to step number four.

Speaker 2 (Participant 4)

Okay, so you're talking. Okay, yeah. I mean, if this is just like business processes, then again, I mean, it'd be interesting, the governance around that, because it's like whether we say thou shall do, or it's like, use us if you want to use it. Okay. And then that comes down to culture again. So it's very difficult. You know, I don't mean to, like, point fingers at the Dutch, but, you know, to say you, thou shall do to the Dutch colleagues is not an easy thing for them to accept.

Yeah. And I think that's why there's been resistance around this, the IMS, that's the root of it.

Speaker 1 (Sophia)

And what I've tried to do is kind of validate this model that I've created that I. Previously. The quadrant with one of the processes within RACI. So I took the project risk assessment module. Where would you place that specific module in this graph, if you could? Where do you think that's kind of falls into?

Speaker 2 (Participant 4)

Yeah, gosh, this is very difficult, just to answer your direct question, because people that fill in the risk assessment on a regular basis and do it well, people that are kind of well versed in what can go wrong in projects can fill it in. It's not the easiest tool to fill in, so it's definitely got room for improvement from a digital tool perspective, which, you know, we've been talking about for a long time, actually, I do a lot of client risk management, so I'm quite experienced in risk management as well. But the. We have definitely have a process, you know, it's subject to interpretation and it's basically lack of knowledge that lets it down people, so.

Speaker 1 (Sophia)

And is that knowledge of the industry and of the actual risks or knowledge of the tool we currently use?

Speaker 2 (Participant 4)

So a little bit of both. And sometimes I don't know how to add project specific risks in because it's a bit of a funny quirk on part of the tooling. So that's what I'm saying. The tool can definitely improve, but a lot of it is because they think everything's going to go perfectly well, nothing's going to go wrong, and therefore they don't have any contingency sums. So it's a lack of knowledge in the subject as well as the tools. Sometimes it's not the easiest thing to use. So where do I sit it? It's probably in the middle of the crosshairs or something. I don't know.

Speaker 1 (Sophia)

And what do you think that can be improved within the process that would bring it to a more ideal scenario in the top right hand corner.

Speaker 2 (Participant 4)

Yeah. So the fact it's in ABW is like a clunky thing, which the business knows about. And then with the ERP project, I don't know if you know about that, but then it will get a complete overhaul anyway. So it needs to be a lot. So we spend a lot of time, I spend a lot of time on Participant 2, does training people in how to use Drive to Win and do the risk management process. And I see all of these through Wincom as well. So we need to make it so that it's a lot easier to navigate your way around the tool. So there's definitely a lot we can do about that. We need to make sure that the project specific risks become something that's prominent, not just business risks, it's project specific risks. And then, and then we just need to educate people in terms of not always having, like, seeing that, you know, everything's going to be perfectly fine. I mean, they know that from project experience. But the amount of people that just think we don't need a contingency on something, or they don't think about it. So the education piece, which we could do like through the PM academy and things that I also look after. So it's twofold, definitely. You know, we'll sort the tooling out. We have to do a sticky plaster job at the moment with ABW. And that's hard. You know, Participant 2 struggles with that whenever we want to make any changes. It's really hard. But, you know, when we've got kind of more like a blank sheet of paper, we can design that more like how we want to do it. So yeah, and the reinforcement about looking at the risks properly comes from Participant 5, I think you've either interviewed George or you're going to interview Participant 5. Yeah, he's the risk manager. Or it comes from project excellence managers like myself, like through like the Wincoms and the RAB. So IMB has a proposal review panel that's called RAB, which is like the Wincom. So, you know, we'll comment on the risk mitigation plan and say you need to consider these risks or, you know, make sure that you put proper contingency against things. So it's like an education. It's a constant education piece that's needed as well.

Speaker 1 (Sophia)

So that would be kind of the biggest challenge is that we're missing the education of the people, but also trying to put our way of working into the tool that we're currently using.

Speaker 2 (Participant 4)

Yeah, I think it's terminology. It's terminology in the tool that doesn't help people understand very Not stuck with ABW terminology. Like, for example, if you want to save your RNP, it says submit and ABW will not let you put save. So everybody thinks as soon as they press submit, it's going to go off to somebody, the line manager, to review. But it's not. It's just saved, but it says submit. You know, it just creates loads of confusion. So we need to sort all that out. Yeah. Make sure the project specific risks are more prominent. Yeah. So there's room for improvement with that. That's why it's kind of. There is. There is a process is well documented. People struggle with the tool and. Yeah. The level of knowledge about how to deal with risks and identify risks is also that. Yeah.

Speaker 1 (Sophia)

But you believe that the process is quite standardized and well documented from what I hear, right?

Speaker 2 (Participant 4)

Yeah, yeah.

Speaker 1 (Sophia)

It's just the more of the change management.

Speaker 2 (Participant 4)

Well, I think it's more of the lack in finessing of the tool that's the problem rather than it's not so well documented. So maybe therefore is a bit higher. But in terms of process management maturity or. Yeah. I don't think there's any ambiguity about what the expectations are.

Speaker 1 (Sophia)

Okay, well, that was. Those were my questions. I don't know if you have any additional comments that I didn't touch upon or any feedback that you would like to give me.

Speaker 2 (Participant 4)

No, I think I've given you, like, all of the brief, because, like I said, it's not very easy just to answer like, yes, no, because there's always a reasoning why something, you know, the opinion that I have is as it is, but I think it's good.

Appendix F - Interview with Participant 5

Speaker 1 (Sophia)

So once again, Participant 5, thank you for taking the time to talk to me and so I can get some input about your view on digital transformation and BPM. If you could just introduce yourself and kind of give me a background of your position within the company and your experience and what you do within the company.

Speaker 2 (Participant 5)

Yeah. My name is Participant 5 and I am working with the company for more than 30 years now. I started as a specialist in hydrogeologic ground water flow and ground mechanics. I'm a civil engineer from origin and in the projects, I became a project manager mostly in the soil investigation and soil remediation works where groundwater is a real big issue and the projects got bigger. So my experience grew also internationally. One year I was sent out to Africa to run our local office there in Kenya. After that I became project manager of very large remediation project in Taiwan. After that I came back to the Netherlands with the project in my field of expertise. I'm doing that and my main responsibility is to look at the quality of the risk management in the proposals we sent out. And also I'm involved in the risk management of running projects. Is that enough?

Speaker 1 (Sophia)

Yeah. Sounds like a very diverse job. So you started off as an engineer and then moved into different parts of the company, which is nice. So you've seen a lot. I think your insight is going to be very helpful. So I wanted to start off with asking, are you familiar that RHDHV is currently having a digital transformation initiative?

Speaker 2 (Participant 5)

Yes, I am. Yeah. But I don't know much detail for this.

Speaker 1 (Sophia)

And just when you think of the word digital transformation, what kind of stands out to you or what do you think of the concept or the word when you hear it?

Speaker 2 (Participant 5)

Well, that's the digital applications become more mature than what we have at the moment and they can better talk to each other. At the moment. We have all kinds of separate applications and not connected. And in my view, that transformation is to have these things more connected and better accessible for all the stuff.

Speaker 1 (Sophia)

Yeah. Is that what you mean by mature, that they talk to each other? Or is there something else that you mean also by mature?

Speaker 2 (Participant 5)

I mean that the applications are a little bit separate from each other and there's no main connection between them. That is what I mean.

Speaker 1 (Sophia)

Okay. And like, the data that you get out of them, for example, is not really consistent or not really, yeah, connected to each other. Something like that?

Yeah, something like that, yeah.

Speaker 1 (Sophia)

Yeah. For the purpose of the project, I could not find a concrete definition of digital transformation. So I've kind of made my own combining previous academic research definitions. So this is the definition that I came up with. So digital transformation is a strategic and sustainable initiative concerned with redesign of business and operational models, entailing creating value and enhancing user experience by leveraging digital technologies key resources and capabilities. Do you agree with this definition or do you think it's missing something?

Speaker 2 (Participant 5)

Well, no, that is more or less what I also had in mind, but my wording was not so professional about it.

Speaker 1 (Sophia)

No, no problem. Yeah, because in my definition, I also talk about key resources. So these, I speak about people and their capabilities in terms of skill sets, but also including the digital technologies or tools that we use as a company. So, yeah, it's a combination of the three a little bit more. So, yeah, that's how I differentiated it a little bit. It's more of like a holistic overview rather than just focusing on the technologies.

Speaker 2 (Participant 5)

Yeah.

Speaker 1 (Sophia)

So, yeah, that's how I reworded it a little bit more. Do you have any other comments on this definition or something that stands out to you?

Speaker 2 (Participant 5)

No.

Speaker 1 (Sophia)

Okay. Yeah, so. There are a lot of models for digital transformation. So this particular model that you see here is a digital transformation process according to a, or mapped against the capability matrix. So we're going to take a look at the right hand side. So the maturity level from one to five. Is there something that you've seen before this interview or...

Speaker 2 (Participant 5)

No.

Speaker 1 (Sophia)

Okay, so we're just going to take a look at the right hand side, focusing more on the digital transformation side. In the next slide, I'll show a little bit more detail about what each level entails. So with zero, level zero being that there is no digital transformation, and with level five being on an innovative level. So based on the criteria or kind of your experience within the company, within your different roles, if I were to say as an assumption that Royal Haskoning is at level three, would you agree with the statement or would you put it somewhere else? And why or why not?

Speaker 2 (Participant 5)

Yeah. Number three is also what I conclude. Yeah.

Speaker 1 (Sophia)

Okay. And why do you think that, for example, we're at level three and not level two or four? Is there specific examples you can give me or...

Speaker 2 (Participant 5)

Yeah, we have... most of the things we already have in place. It's vertical integration. It is in place. And when you go to level four, then it is horizontal integration that is still missing. And that is what I also indicated in the beginning. So I think that level three is just the right level that we are.

Speaker 1 (Sophia)

Yeah. So we're currently at level three. And, yeah, we're still working towards it. So we're kind of in the middle, so to speak.

Speaker 2 (Participant 5)

Yeah.

Speaker 1 (Sophia)

And what is your level of knowledge on business process mapping or business process management at the moment? Are you involved in any projects that are going on?

Speaker 2 (Participant 5)

No, only on the item risk management and the procedures, et cetera. That's where I am involved. Also with the automation processes in the background that are related to that. But not in a general way. Yeah, only in a risk management related way.

Speaker 1 (Sophia)

Okay. And is that more of the functional side or are you also involved in some of the technical?

Speaker 2 (Participant 5)

No, only functional.

Speaker 1 (Sophia)

Okay. Yeah. So because there are no models that exist currently looking at digital transformation versus the business process management maturity, I've created a quadrant model to kind of map those two against each other. So digital transformation maturity from level one to five from using the criteria that we just took a look at. And the business process management maturity from low to high, where I consider low being very unstructured and informal processes, no standardization, no KPI's to check the progress. And high being very structured, there's improvement, things are made in a data driven way. Where would you place RHDHV as a whole? So a more holistic overview? In which color, so to speak?

Speaker 2 (Participant 5)

Yeah, I think then the top left or so.

Speaker 1 (Sophia)

Yeah, the light blue kind of.

Speaker 2 (Participant 5)

Yeah. Yeah.

Speaker 1 (Sophia)

Okay, so you think our business processes are quite mature and standardized and documented from your knowledge or from your experience?

Speaker 2 (Participant 5)

Yeah. But like I said, the integration is still missing.

Speaker 1 (Sophia)

Yeah, yeah. Because you mentioned the integration between technologies. Do you think the integration between processes is established and maintained?

Speaker 2 (Participant 5)

Yeah, it is, but it's all on paper and it's not already in a digital way. And we are at the moment, we are already capable of using data driven analysis, but we are in a low and an early stage of that. And that should be more, I suppose, more done in the evaluation of our processes. I think that maybe since about three years we have a good building up, good database for doing that and now it can be the time to utilize all that.

Speaker 1 (Sophia)

Yeah. So we started off and the data is there, just need to use it a bit more from what I'm interested in.

Speaker 2 (Participant 5)

Yeah.

Speaker 1 (Sophia)

Okay. Yeah. So for the purpose of this research, I'm mostly looking at the top right hand side, so where everything is high and yeah, both maturities are very high level, indicated by the logo of the company. So I've kind of created a checklist for both items and also artifacts that need to be in place in order for a company to be considered in that area and prioritize them from what I believe is important. From a more top down approach, starting with the vision and the vision statement and the strategic objectives from leadership that's supporting the stakeholders, business processes being compliant with requirements and industry standards, then them being documented to ensure reproducibility, having an ownership of each step. So breaking down the process and having someone really take over that, then having KPI's that are used to actually measure the performance. So yeah, we're collecting the data, but then what do we do with it? And lastly, it's the culture of continuous improvement and scalability. So starting off with a small process, but then actually moving on to other ones. Do you agree with the items that I've stated here? Would you add something else or reword anything?

Speaker 2 (Participant 5)

No, I think it's quite okay. Only that if you have to be compliant with regulatory requirements, etc. That is of course very important.

Speaker 1 (Sophia)

Yeah. So this is more of a top down approach. What's your opinion of using more of a top down approach versus a bottom up?

Speaker 2 (Participant 5)

I think that should be a top down approach and it should be implemented from the top and this cannot be done from the staff itself if you mean that.

Speaker 1 (Sophia)

Yeah, yeah, that's what I mean. So you believe that also for our company in specific, the top down approach is a better way of going about this change or moving towards it?

Speaker 2 (Participant 5)

I think so, yes.

Speaker 1 (Sophia)

Okay. Yeah. And moving towards the application. So what I'm trying to do is actually validate whether this model works or whether it could actually be useful. I wanted to apply it towards the risk, the project risk assessment module within the company. That's a pretty standardized process, I would say, in my opinion. Where would you pinpoint that process specifically? In which color would you put itq, for example?

Speaker 2 (Participant 5)

I think that as a module, it's very high standards and it's well digitalized. So I would say that it can be dark blue.

Speaker 1 (Sophia)

Okay. So you think that, for example, everything that's in the checklist is applicable to the risk assessment module?

Speaker 2 (Participant 5)

Yes, I think so, yes.

Speaker 1 (Sophia)

Okay. And in terms of the company as a whole, do you think that because you mentioned, okay, the company we think is at a light blue, do you think that everything is covered or where do you think that we are lacking or could improve in terms of this priority list?

Speaker 2 (Participant 5)

You mean for risk assessment?

Speaker 1 (Sophia)

Yeah, first for risk assessment and then the company as a whole as well?

Speaker 2 (Participant 5)

I don't understand the question.

Speaker 1 (Sophia)

Yeah, because for the company as a whole, you mentioned that it's going to be in the top left, so the light blue. So that means that there is room for improvement, for example. Is there something that you believe from this checklist that is missing or we can do better and to move towards the dark blue or the ideal scenario?

Speaker 2 (Participant 5)

Yeah, well, I think the step six and step seven are still incomplete.

Speaker 1 (Sophia)

But you believe, for example, specifically for the risk assessment process, we are performing step six and seven as well.

Speaker 2 (Participant 5)

Well, I think not completely, no, because the way the people treat the risk assessment is still not in the highest level where people are forgetting it and making it too easy and do it at the last moment and things like that. That is still not as it should be

Speaker 1 (Sophia)

Yeah. And what do you think that we can do as a company to help people to actually push them to do this in a more timely manner, structured manner?

Speaker 2 (Participant 5)

To make it more user friendly and that it becomes an easy, accessible standard that pops up in the right time during a project or proposal and comes back when it is needed so people can keep up there risk lock in a timely manner.

Speaker 1 (Sophia)

And this is more of a requirement from the tool we're using, then it's not on person.

Speaker 2 (Participant 5)

Yeah.

Speaker 1 (Sophia)

Okay. So you believe that the tool that we're currently using is not friendly enough or not annoying enough to actually get people use it.

Speaker 2 (Participant 5)

Yeah.

Speaker 1 (Sophia)

Okay. But you believe, for example, that people are informed enough on what to do, how to do it?

Speaker 2 (Participant 5)

Yes. They are informed, yes. Also, our problem within the company is that we have a lot of project managers that run their own projects, but they are responsible for the whole project. They are quite small projects and only one person working on it. And that way they are not doing these things regularly. And that's the reason that they are not very familiar with it. And when it comes up, they don't understand it and they have to take time to do the things in the right way and that is not leading to the best performance for these small projects.

Speaker 1 (Sophia)

And you mean for project performance or the administrative work for projects?

Speaker 2 (Participant 5)

I don't think that the project performance is poor immediately because they don't do the risk assessment in the right way. When you don't think about these things like risks, then you run into problems that could be avoided. So it means that those projects have higher risk, actually, than a project that has been well thought over from the beginning.

Speaker 1 (Sophia)

Yeah, okay. And do you think this has to do something with change management, for example, or the culture of the company and people's ways of working.

Speaker 2 (Participant 5)

Yeah. If you don't have the easy tools to do things and you get prompted in the right time to have some actions, then people are going to forget that these things are important. So it's both cultural and both technical.

Speaker 1 (Sophia)

Okay. And because there is something that's been reoccurring in my interviews of people bringing up the people process technology approach. How do you think that we're approaching it right now? And do you think that's the correct way that we're doing it, that we should be doing it?

Speaker 2 (Participant 5)

I support the people project technology sequence, of course. People process technology, but we provide the technology, and the people are not quite familiar how to use it.

Speaker 1 (Sophia)

Yeah. So we're going, from what I'm understanding, we're going about it kind of backwards.

Speaker 2 (Participant 5)

Yeah. We implemented it in a backwards way, and that is because we don't have a general project environment where everything that is needed for the project has a good overview for the project manager.

Speaker 1 (Sophia)

Okay. Yeah. So currently we're going at it with the technology first, rather than really figuring out what our people need is what I'm understanding.

Speaker 2 (Participant 5)

Yeah. My ideal view is that there is some kind of application that you fill in the project number, and then you get an overview of all the things that are in place or missing performance and et cetera, people involved. You can easily have an overview of everything that is important in the project. As long as we don't have that. People have to just initiate a specific task, like risk management for the project. They have to do that by themselves. They are not guided to that action.

Speaker 1 (Sophia)

Yeah. So we're missing the data that you said that wasn't user friendly. So then we cannot collect the data correctly. And if, for example, that data that we collect from the technologies, would you add it as a separate pillar to people processed technology, or would you add it underneath one of the main three pillars that we have right now?

Speaker 2 (Participant 5)

I think that is underneath, I think we need to evaluate where we are and to do analysis on our company profile, the risk profile, and the things that we do. So we can guide to improvements when we analyze that data.

Speaker 1 (Sophia)

Yeah. So now we're not really using the data to make the decisions, but kind of just taking decisions without having any backup.

Speaker 2 (Participant 5)

No, that is roughly true, but it's of course, it's not completely true. We do use that data and we make good decisions, but there's room for improvement in that.

Speaker 1 (Sophia)

Yeah. And as you mentioned, that room for improvement would be to have it a bit more clear and actually having people or having it trigger people to actually fill it in.

Speaker 2 (Participant 5)

Yeah.

Speaker 1 (Sophia)

Okay. Yeah, I think those were my questions. I don't know if you have anything else to add or any feedback for me as well.

Speaker 2 (Participant 5)

No, I don't think so. Of course. We all like to know what your result will be from your study and how it is scored in the university.

Appendix G - Interview with Participant 6

Speaker 1 (Sophia)

So Participant 6, thank you so much for taking the time to conduct this interview with me. A little bit about the project that I'm doing is I'm taking a look at digital transformation maturity levels in correlation to business process management maturity levels. Currently, what I've done in my research is - looked at different models on both topics separately, since I was not able to find one that combined the two factors. And later on I'll show you the model that I've created myself based on some drawbacks that I've seen on existing models. And yeah, I just wanted to get your input on this and your experience within RHDHV, but also some more on a theoretical level and just see what your thoughts are about it. So if you could introduce yourself and let me know what you do within the company and what your experience is.

Speaker 2 (Participant 6)

Okay, well, thank you for inviting me to have this interview. Always nice. My role in the company is that of project excellence advisor, as it's called, which means that I'm supporting project managers in preparation of proposals and in the, well, bimonthly reviews, supporting them with more difficult issues in their projects. I have a background in project management, mostly in process industry, chemical industry in all kind of roles. I'm a chemical technologist, process engineer by profession originally, but have been in line management, project management roles for the past 35 years. So yeah.

Speaker 1 (Sophia)

So started more of a technical role and then moved into more of a management role.

Speaker 2 (Participant 6)

Yes.

Speaker 1 (Sophia)

So are you actually aware that Royal Haskoning has a digital transformation initiative within the company now?

Speaker 2 (Participant 6)

Yeah, I am. I am aware of that. But for me, digital transformation is something that basically started when I started working. At that point in time, there was not yet email, there was fax machines and there was drafting in computers, but that was all 2D. And over the past 35 years, I guess that has moved on, developed into 3D. We moved from faxing to emailing to teams and got the type of communication that we are having now, which for me is now regular. While ten years ago I was sitting in an office and talking face to people. Now 95% of what I do is through teams, through emails, chatting, which is way different. And then the digital transformation continues in automation of producing what we as an engineering firm, we produce a lot of paper basically, and a lot of that is, well, nothing is done by hand anymore. No more drawing boards, everything in the computer, and more using templates, frameworks, systems that

automate things that in the end are repetitive and boring. It's been a slogan from our former CEO, I guess, already 15 years ago, who said, well, do the exciting and automate the boring. And that is, yeah, I guess that is what's happening. And now we're moving from, well, we're moving from Googling to using AI and all kinds of systems to, well, to go once more, a step further in that. So that's what it is for me. And I know that there's a lot of work being done to do that automating stuff or professionalize that automation part of the work. Does this answer your question?

Speaker 1 (Sophia)

Yeah. So just to reiterate for you, digital transformation kind of entails the automating and introducing technologies into the workspace. Is there anything I'm missing?

Speaker 2 (Participant 6)

Yeah. So the technology supports the work, supports the processes. Yeah. And it takes over some of the boring and repetitive stuff.

Speaker 1 (Sophia)

Yeah. So for the purpose of this research, I could not find a specific definition from previous academic literature that really encompassed everything that I think that digital transformation is. So I made my own definition from combination, combining different concepts. So how I view it as a strategic and sustainable initiative concerning the redesign of business and operational models and creating value and enhancing user experience with digital technologies, key resources and capabilities. So I'm also touching upon key resources and capabilities, which, I mean, employees and their skillset. Is this something that you agree with?

Speaker 2 (Participant 6)

Yeah. The issue I always have with this, for me, it's people, processes, tools, and that's the hierarchy. People that are in digital transformation or in ICT tend to put the tools at the basis of it all. So of course, in the end, if you have this new tooling which is available and AI is also, for me, it is a new tool you can use. It does change the work processes and it does change the life of people. So if you define it like this, it is the people that have to adapt to the new systems, to the new tools, rather than the tools being designed to fit the purpose of the people. But that's in essence, I understand what you're saying. And if you start with, okay, now we have all these new possibilities and we are going to use them, because if we don't, we'll fall behind and not be competitive anymore in the future. And then I understand it. What cannot be overlooked is that when you try to implement these new tools, the acceptance of the tools is essential to the success of the project.

Speaker 1 (Sophia)

Yeah. So do you think us as a company at Royal Haskoning, do you believe that we are prioritizing our people over technologies the way that we should be, or what's your viewpoint on that?

Speaker 2 (Participant 6)

If you look at the specific. Now, let's put it differently. We had, we had this initiative, DWOW in the company until one or two years, a year ago, I guess, a year and a half, and DWOW basically was successful because there were enthusiastic groups of people developing specific tools that could be used in certain circumstances or for certain projects, certain project phases, whatever. And that was very successful for the limited number of people that actually could well believe in the development and were computer savvy enough to actually do it. But it was not something that was adopted by the vast majority of people in the company. So if you look at digital transformation, I guess you have to separate it, separate two things. That is the way you want, in general, all people in the company to change their work methods or change their work processes, because using the new toolkit or the new tooling will increase productivity or quality of what we do. So if you look at how, for example, Teams, but not only Teams, but also if you have the Microsoft 365 suite and the type of cooperation you can have in that changes the work methods of all the people. And the adoption of those tooling by the vast majority of the people in the company is something different than developing tools for specific purposes which require more knowledge and more dedication of a group of people to solve a specific problem. And I guess here when you talk about digital transformation, you're more talking about the first part, the way of cooperating digitally and using generally available new tools. We used to have chat GPT, but that was abolished now for very good reasons. But that is AI is something that all people should start using in some way and will change the way the working methods of all people in the company. So if you take that part of digital transformation, then I guess this would fit your definition.

Speaker 1 (Sophia)

Yeah, because you mentioned something about adoption or adoption rate. Do you think that this should be a part of the definition or is it a completely separate topic?

Speaker 2 (Participant 6)

The success of the transformation strongly depends on the adoption of the tooling that you provide, that you make available. Without that, it'll be toys for a limited group of people. And that is not what you want with digital transformation, I guess.

Speaker 1 (Sophia)

Yeah, okay, that's pretty clear. So looking at different models for digital transformation, this is one model that I've been using. It's a pretty recent one from 2022. It takes a look at the digital transformation maturity versus the capability maturity. So we're going to be taking a look at the right hand side so you have the different maturity levels which is from initiated to innovative on the right hand side. Have you seen this model before this interview?

Speaker 2 (Participant 6)

This model? No, I haven't seen. I haven't seen this. It is something that relates to other ladders, I guess you can step up as an organization.

Speaker 1 (Sophia)

So taking a look at the right hand side and the digital transformation maturity models from incomplete to innovating with incomplete being that there is no digital transformation and innovating is very advanced. If I were to say the statement that Royal Haskoning has reached or is part of level three, would you agree or disagree and why or why not?

Speaker 2 (Participant 6)

I think three is quite a positive view on what we actually do

Speaker 1 (Sophia)

Okay.

Speaker 2 (Participant 6)

I would say level two more fits where we are now having a mind that we have this four years of DWOW that was there, which was. Here you mentioned pilot studies, but it was initiatives for specific groups of people for specific purposes. We have moved, well, we are just moving in terms of data management or information management. We are just moving from Box to Teams. I wouldn't call Box very innovative or front end. I don't know where you put a tool like this on this, where it would fit in, but it's definitely not cutting edge. We have moved to teams and the type of cooperation that belongs to that. But if you look at what the people actually do, you'll find that majority of people is still typing their reports in word. Is that answer in line with what you heard from other people or is that a more conservative approach?

Speaker 1 (Sophia)

There has been a consensus that we are at a lower level than I believe. But of course I have only been at the company for two and a half years and I have a very small overview of the whole company. I think most people that I'm interviewing have a more holistic overview. So indeed I may be overreaching. And it is, yeah, due to my not being exposed to a lot of areas.

Speaker 2 (Participant 6)

Let me make it. Let me make a comparison to a... I already mentioned that I worked in process industry, chemical industry, quite a lot. If you look at the tooling that is used for 3D modeling in that industry, you will find that the tools for 3D modeling, which is database oriented and from which you can pull all the components that you need to build the actual facility. These systems are 30 years old and in full operation and they existed even before Windows was introduced and were operated typing command lines in the old, in the DOS operating system. At that time, 3D modeling and using that tool was I guess cutting edge and not seen anywhere outside process industry except for maybe in machinery and that kind of thing. Haskoning is only now when it comes to that, at the point where process industry and the engineers working for that were like 30 years ago. So that's not really cutting edge. The innovative part of our

company sits in the technical ideas of the people we have, of all the IQ points that are gathered in this company, but not so much in the development of IT or digital tooling.

Speaker 1 (Sophia)

Can you think of a reason of why you think that we are now doing what was done 30 years ago in other companies?

Speaker 2 (Participant 6)

The necessity of doing it in a different way, so that the necessity of using that tooling in that industry, in the process industry was much higher at that time in terms of the complexity of the equipment and the necessity to have very accurate designs before you start constructing illustration, think of an oil platform somewhere out at sea. If you want a new component installed on that oil platform, you need to design it and make it so that it fits. When you bring it with that expensive helicopter to that platform, it must fit, so it must be accurate, it must be good. And in that sense there was less tolerance for error. In the type of work buildings, mainly civil works that RHDHV is best in, that's the vast majority of what we do that is not so critical.

Speaker 1 (Sophia)

Okay. So it's mainly on the demands of the industry. Do you believe it's also because you mentioned a bit of a change management, do you also think that's part of it?

Speaker 2 (Participant 6)

Yeah. Change management in RHDHV is difficult because we are 6000 people hired to be very innovative in what we do ourselves and be very good at communicating with clients and deliver quality in that sense. But being creative also means that you are not very happy when you have to do things in a standard way or standardized or repetition or, yeah. So in general the RHDHV population does not like systems, period. And you see that for example in the use of our ERP, our financial system, a lot of people hate it and that's maybe wrong. Most of the people within RHDHV hate it even if they only have to do their timesheets in it. So I don't think so. Anything that looks like a system that forces you to do things in exact the same way, fill the boxes, make sure that it's done correctly, otherwise it won't work. That doesn't do well, that's not in the nature of the people. If you look at engineering firm for process industry, you'll find that 85% of the people are very happy when they can do things in a very structured way within their box, and they don't object or object far less against having to use a system with its own restriction. And basically all systems, all digital tooling has its restriction. If you fill out one box incorrectly, system says no. And people in RHDHV don't like systems that say no.

Speaker 1 (Sophia)

Yeah, they're losing their individuality.

Speaker 2 (Participant 6)

Exactly, exactly. Yeah. So if you, and that is why I already mentioned that the adoption and so the implementation phase of anything new that you want to do is very important. If you can't explain to people what's in it for them, so a direct positive effect on your working day, then it will be difficult. And in terms of discipline and hierarchy, in some companies, when the boss says, go this way, then everybody goes that way. Well, if you want to start a debate in the company, then the boss should say, hey, we're going to do it this way because there will be 20 people listening and 19 will ask, why? Why are we going to do that? And why is that? Why is that helping me? I don't think I like it. I'm not going to do it. And then there's no disciplinary action, of course, because we're not a company. We're not that company. So digital transformation, the success of that is depending on how attractive you make it for the average employee.

Speaker 1 (Sophia)

Okay. Yeah, that makes sense. That's quite insightful. Thank you. So what I have, because as I mentioned, I have not found any models that take a look at digital transformation in correlation with business process management. So what I've made is a quadrant model, taking a look at digital transformation, maturity from level one to five on the horizontal axis and with the business process management maturity on the vertical, from low to high. In this context, I consider low maturity as processes that are undocumented, unstructured, don't have standardization, and there's no KPI's or bottlenecks that are identified, whereas high maturity would be standardized processes, documentation and, yeah, monitoring of how the processes are performing. With that information, where would you place the company as a whole overview?

Speaker 2 (Participant 6)

Okay, I don't want to complicate it for you, but there is business processes and there are what we are a project, a company that executes projects and there's processes for executing projects. So the business processes in the company are largely the, for me are the processes by the corporate groups, by HR, by finance - so the management, the tooling of the, sorry.. The processes of line management. And that is something different from the processes for projects that project managers use. Has anyone made that distinction?

Speaker 1 (Sophia)

No, actually, that's a first one, but yeah, you can take the question whichever way you want to.

Speaker 2 (Participant 6)

When it comes to business processes, so how we have organized HR, have we organized our finance, and I think we're pretty mature. And the reason I say that we are developing an IMS. Have you heard of that?

Speaker 1 (Sophia)

Yes, I have.

Speaker 2 (Participant 6)

Now, in the IMS, there's these two parts. There's the business processes of the corporate groups. So anything but project management. And when developing the processes for the development of the processes for that, or the process flow schemes for that is basically completed. Which means, okay, apparently we all agree on how certain our recruitment process or those kind of things, how they are done. So it was easy to document that in an integrated management system, in process flow sheets, basically, and that was done in a year or so, and it's basically ready for project delivery or project management. You see that people say, okay, I do this type of project, so I do need this process. And then the next project manager says, no, my project is completely different, so I have to do it this way. So there is no uniform way of executing projects, which is, I guess in your definition, also a business process. But the process for a specific project strongly depends on the nature of the project. There's a difference between designing a hospital or designing a bridge. You not only need different people, you have different stakeholders, you have different tooling, different project phases. So you have to make these processes specific for each type of project. And if you look at, we have business line digital now as well, which is not even designing or any engineering stuff, but is developing products, which is something different. And the development of the IMS for these project delivery processes is very complex. And I think our maturity on that is not that high when it comes to digital transformation. Not everybody likes it, but our HR system is. If you want to work a couple of hours less, there's a small form you can fill out. It goes to your manager and he or she will approve or give you an angry call and say, what the heck are you doing now? But as such, the business process is clear. Everybody knows how it can be done and no issue. So there in terms of automation, that's pretty good. If you want to take digital transformation one step further and to what extent is that not a old fashioned database type system with an interface which is more or less user friendly. Okay, can discuss about that. But yeah.

Speaker 1 (Sophia)

Because previously, for example, we identified that the digital transformation maturity of the company as a whole would be at two. So that leads me to believe that we would be somewhere in the orange/light blue. And as you made the distinction now, depending whether it's a corporate process or a project delivery process, if I'm understanding correctly.

Speaker 2 (Participant 6)

Yeah. So when it comes to business process or the more line management, business type business processes, we could be in the. Where are we then? In the blue somewhere not too far from the center. And when it comes to project management, I guess we are in the orange, but in the top right corner somewhere of the orange.

Speaker 1 (Sophia)

Yeah. Okay, that's pretty clear to me. So, yeah, in my research, because of time constraints, I'm mostly focusing on the ideal scenario. So that would be a high BPM maturity, but also a digital transformation of level five as indicated in the top corner by the RHDHV logo. So what I have done actually is created a

checklist of the items that I believe overlap for both BPM and digital transformation and their corresponding artifacts or tangible results or some stuff that was not in either one, but I think is important. So first, starting off with a vision and a strategy, and then having leadership support the project or initiative. Then having business processes compliant with requirements and industry standards. Then those same business processes being documented and structured, having the ownership of each step within those business processes, having KPI's used to measure the performance and have data driven decisions and lastly having a culture of continuous improvement and scalability. Do you agree with this prioritization in this list of items? Or would you add something else or shuffle them around perhaps?

Speaker 2 (Participant 6)

Okay, this is prioritizing. And also, is this also the way you see the logical order of development?

Speaker 1 (Sophia)

Yeah. So what I did was I took more of a top to bottom approach and this is the way that I think, or all the items that I believe that need to be kind of in place to reach that ideal scenario.

Speaker 2 (Participant 6)

Yeah. So between five and six, you go from organizing to reporting, basically. Yeah. Closing the loop, quality terms. So I can. Yeah, I think the order for me is fine. Yeah.

Speaker 1 (Sophia)

Yeah. Would you add something else? Do you think I missed something?

Speaker 2 (Participant 6)

Yeah, sorry. I'm thinking. If you look at step five there, you basically say, okay, let RACI chart tells you who's responsible, who's responsible for what, who's doing what. And it suggests that if you have a RACI chart that it. That everybody will do exactly all of its roles, stated in that chart. But between the RACI chart and the ownership, there's the adoption. So that's the difficult, that's the difficult part, I guess.

Speaker 1 (Sophia)

And do you think that, does the item needs to be expanded or is that an over? Is the adoption an overarching item over all items?

Speaker 2 (Participant 6)

I guess it's over, well, yeah, you could call it overarching. So if you look at digital transformation from the ADKAR principle, if you're familiar with that.

Speaker 1 (Sophia)

Yes, I am.

Speaker 2 (Participant 6)

Then in all this, only two, it's defining the sponsorship of the transition or of the change process. And that's not, that's not so clear in the other steps. And so doing this without a maybe the stakeholder engagement plan is supposed to do that, but you need a communication plan through all phases of your process to be successful in terms of having acceptance and adoption of what you're trying to achieve.

Speaker 1 (Sophia)

And where do you think that Royal Haskoning could improve within these steps? Because we did identify it in being the orange or the light blue square. Where do you think that we need to improve in each step?

Speaker 2 (Participant 6)

Yeah, the question is, well, these are things that if you.. No, question here, do you see this digital transformation as an ongoing process or as a project with specific goals at this moment?

Speaker 1 (Sophia)

I believe that it's an ongoing, well, I believe that it starts off as a project, but then it needs to end as an ongoing initiative. It's not something that I think that can be done in, let's say, a year, and then it just stops. So that's why I have the last item of improvement in scalability.

Speaker 2 (Participant 6)

What I think is, if you want it to be successful, you have to view it as a project, a very specific goal based on the new tooling options that is available, and make a very clear path or project plan, project schedule, if you want, how you want to implemented. So, for example, if you. We have, we now have Copilot. And that's a typical example, Copilot was mentioned. Oh, hey, by the way, we don't have chatGPT anymore. We didn't think that was a good idea. So now we have Copilot. Yay. What else, that is? Okay, so it's available now. And true believers may think, wow, hey, this is great, I'm going to use it. But if you look at how many people in practice are using Copilot and what it can do to make their work easier, if you go and check now it's probably one and a half percent of the population. So yes, the tool is there, but the impact on the organization and the impact on productivity or profitability or the company in the longer run without any further attention, is minimal and some ideas, so I am in this workgroup now that started, well, last month. I was in the first meeting... but yeah, I missed the first meeting, so I was in the second. So that is starting, that is starting now. But it takes a lot of effort to implement the change. And if you don't approach it as a project and you won't achieve specific goals, maybe I'm saying this because I'm project manager by heart and I've been line manager as well. So I know that the organizations need stability as well. But if you want to change, then you need to have that approach with some additional focus for a limited period of time. And you have to convince, in this case a majority of the population that it's worthwhile using that Copilot stuff. But you have to tell them how to and how they could benefit from it. But it takes a lot of effort and the company is not good at putting a lot of effort in change initiatives.

Speaker 1 (Sophia)

And do you think that this is also due to company culture and the international nature of our employees?

Speaker 2 (Participant 6)

I don't think the international nature has a lot to do with it. I mean. No, no. What is important or what is not helping is that we, the company culture means that everybody can decide for himself how he wants to do, what he must do. And we have a lot of yellow people in the company, if you know this one.

Speaker 1 (Sophia)

Yeah.

Speaker 2 (Participant 6)

And we don't have a lot of these people in the company if you don't recognize the color blue for people that like facts and boxing in things. So the fact that we are a company with a lot of creative people does not help in introducing things that are then used by everybody because everybody wants something else.

Speaker 1 (Sophia)

Yeah.

Speaker 2 (Participant 6)

Doesn't make you happier. My answer here.

Speaker 1 (Sophia)

No, no. It's just interesting. I think culture is a very controversial topic, I believe. So a lot of people are kind of scared to approach that topic. Originally, my research also was going to include culture, but it just brought a lot of complexity into modeling and also interviewing and gathering more results. So I decided to take it out. But it seems to be a reoccurring theme in the interviews with change management and ADKAR and...

Speaker 2 (Participant 6)

Yeah, but culture, I mean, this is only one aspect of company culture. If you look at. If you look at diversity or integrity or safety culture, all types of culture, these are important aspects of culture of the company, but have little to do with acceptance of digital transformation or success of digital transformation.

Speaker 1 (Sophia)

Okay.

Speaker 2 (Participant 6)

The type of people and how they deal with change is a very important cultural aspect that affects the digital transformation. So, yeah, so if you take only that aspect of company culture, then you can use it.

But in general, of course, diversity has very little to do with that. So you can leave it out. If there was sensitivity around that, then yeah.

Speaker 1 (Sophia)

And do you do a lot with the risk assessment module as a project manager now, or is that a little bit out of your scope now?

Speaker 2 (Participant 6)

That is completely in my scope. As doing project excellence and supporting project managers in getting their proposals approved or having a monthly review of their projects. Project management is about risk mitigation and the risk assessment. I help project managers go through the risk assessment modules and describe their risks in a risk mitigation plan. I think when I started with the company 15 years ago, I got a question from a guy called Erik Oostwegel. He said, hey, you come from Fleur. How is risk management done within Fleur? Because we don't have a lot for that. But that was in 2008, so that's 16 years ago.

Speaker 1 (Sophia)

Yeah. And if we go back to this model, where would you kind of plot the risk assessment or the project risk assessment within these four quadrants? Difficult question.

Speaker 2 (Participant 6)

Yeah, so risk assessment as a... If you talk about the risk assessments that we do upfront for proposals. So at the start of all the work that we do, that is automated in a very old fashioned ERP system where PMs tick certain boxes and then get certain questions. And the advice to talk to a specialist as a process that is, I guess, quite well developed, because I haven't seen it like that with my previous employees. How does that relate to digital transformation? I don't know. How innovative is an old fashioned ERP system where you tick boxes to identify risk and quantify risk? It's a tool that we rather get rid of because it's outdated.

Speaker 1 (Sophia)

And do you think that's the biggest challenge within the risk assessment, is the tooling, then?

Speaker 2 (Participant 6)

I think a more appealing tooling for the risk assessment would very much improve the quality of the risk assessments that are done, yeah, because the current tooling is, well, a lot of people hate, well, most people hate ABW and the risk assessment is now in ABW. That doesn't help. And a more appealing tool with some pictures and accidents and things that could go wrong, more illustrated, I definitely would think, and also more interactive, so directly communicating with the experts on specific risks. So for example, have one of the risks - we start working for a company that is involved in some kind of legal issues or taking money from people that they shouldn't be taking money from, those type of things. If we had a system in which the project manager was approached when typing, okay, I'm going to work with this and this company that the system flags. Hey, this company is not okay. And the PM is contacted by

our, in this case, group compliance officer, I guess from, hey, do you know that this company is not okay to work with. That is much more, that would lead to a much better risk mitigation than now where we say, okay, are you aware that this company is flagged for not being compliant? Please contact our GCO.

Speaker 1 (Sophia)

Yeah.

Speaker 2 (Participant 6)

See what I mean? If you want to make it easy for people and where tooling, modern tooling can help is at the moment that they identify a risk that the interaction with the person that can help with that starts, or the system already can give some of the answers. I guess there's not a lot in the financial advice that is given, at least now, or the legal advice that is given that cannot be standardized or generated with limited input by a system.

Speaker 1 (Sophia)

Okay. And from what I'm hearing, I would, maybe you would plot it in the light blue then, since it's not very digitally innovative, but the maturity of the actual process is pretty high.

Speaker 2 (Participant 6)

Actually, I was looking at you not at the model. Yeah, it's in the light blue, I guess. Yeah.

Speaker 1 (Sophia)

Okay.

Speaker 2 (Participant 6)

There's a lot to be improved that can be improved into when you talk about risk assessment and do you think.

Speaker 1 (Sophia)

That people, in terms of the PM's and do you think that they're educated enough on what to do? I mean, in the current system and just in general, because you mentioned something about inconsistency between risk assessments.

Speaker 2 (Participant 6)

Yeah, well, addressing risk is not on top of everybody's mind. So risk mitigation is not always done because the project manager is not interested in that or doesn't see the risk. And sometimes that is literally true. I mean, not everybody understands the risk of certain formulations in terms and conditions that clients provides us or even formulating a scope of work. If you do it in one way, you only have the obligation to put in a certain effort, if you would it differently, you are, well, you're promising the client that the solution

will work to his full satisfaction. Now, if you formulate it in the latter way, then your risk, your project risk is much higher because the expectation of the client is much higher. So risk mitigation is a complex thing that people need assistance with because part of our population is not interested in risk and part of the population is not educated in identifying risk. So a system, an intelligent system and an attractive system in terms of, hey, this is fun to work with. If I do this, I see a picture of somebody falling off a cliff. Okay, let's not do that. So if you make it more fun to use, then that'll help educating people as well as actually mitigating the risk. And that is something the company could benefit from very much, I believe.

Speaker 1 (Sophia)

Yeah and I am mindful of the time. So it is 4:30. I'm not sure if you have any other meeting to run to, but I'm through with my questions. It was just more of, if you have anything else to mention that I have not covered that you would like to add or any feedback that you would give me as well.

Speaker 2 (Participant 6)

No, well, no, it was quite clear. And it also being involved in the development of tools and systems in the company once in a while, this is actually quite helpful because you spit out the maturity of how we do it and the digital transformation, how it can be supported. And actually the last one, which is very close to what I do, is very helpful for me as well because it is something that is not pushed very hard but yeah, I will put that on the agenda if it's not already there.

Appendix H - Interview with Participant 7

Speaker 1 (Sophia)

So good morning. Thank you for taking the time to help me out with my master's thesis. I've invited you to the interview because I know that you're involved with the digital transformation track within RHDHV. So you do know a little bit of background around my project. But just to kind of recap it, again, looking at different digital transformation maturity models and how they can be combined with BPM maturity models and make a new kind of framework and validate it within the company. So that's a little bit about what I'm doing. As we go through the interview, there are a little bit more detailed questions from your experience, but also validating what I have found. So if we could start off by introducing yourself with your position in the company and how long you've been with RHDHV.

Speaker 2 (Participant 7)

Yes. So my name is Participant 7, I'm the Enterprise Architecture manager and I've been for the company for about 15 years or so.

Speaker 1 (Sophia)

Okay. Yeah. So then if you are part of the enterprise architecture, then you know kind of what a digital transformation is. Yeah. Familiar with the concept and what's your previous experience with digital transformation? Was it now at RHDHV or do you have any previous kind of encounters with it?

Speaker 2 (Participant 7)

No, mainly within RHDHV. My previous role was internal processes advisor within the business line, where I supported mainly the business line in the digital transformation.

Speaker 1 (Sophia)

And when you think of the concept of digital transformation, what kind of key concepts or words stand out to you or how would you define the concept in your own words?

Speaker 2 (Participant 7)

Well, for me it touches upon everything and everyone within our company. And besides the technical part, it's really also a culture change. It's about connecting all kinds of different people and skills capabilities within the company to in the end do something different than we do today, because there are different kinds of people, for example, more commercial people, or more strategic people, or more people who are executing projects or more technical experts or specialists in terms of developing stuff. And all people have different kind of experiences, knowledge and all play value in their chain and we all need to do and take our parts to make in the end a successful transformation. So it's connecting different worlds, different people and yeah, that's about bringing people together, bridging and so culture change as well.

Speaker 1 (Sophia)

Okay. Yeah. So for the purpose of my project, I really could not find a cohesive definition of digital transformation that I really liked myself. So what I've done is taken various research and combined the definition for the purpose of my study. So I have identified a digital transformation as a strategic and sustainable initiative concerned with the redesign of business and operational models by creating value and enhancing user experience with indeed combining the digital technologies, key resources and their capabilities. So a little bit different from your definition because you mentioned mostly the people and their resources. So I've also included the technologies that we're using. Do you agree with this definition? Is there something that kind of stands out to you?

Speaker 2 (Participant 7)

You shared it up front, so therefore I added the culture or a part or highlighted that. Besides that, I think it's good to perhaps consider the internal aspects as well as the external aspects. The digital transformation is also guiding our clients. When we grow in our maturity, we need to help the clients as well in growth of maturity. And sometimes the clients help us grow and sometimes we help the clients. But that needs to go also imbalance because otherwise you get a wrong balance and then you don't understand each other anymore. So then clients are not willing to pay for what we offer or there's no need for what we delivering. So it should go hand in hand. So one end, there's an internal driver for the digital transformation, but there's also an external driver for digital transformation. Yeah, it's good to be mindful of that when.

Speaker 1 (Sophia)

Yeah, sounds good. So for this research, I took a look at different digital transformation maturity models. And the one that I have chosen to use is the digital transformation capability maturity model. So it's a combination of a digital transformation and then a capability maturity model and then combined together. But for the purpose of this research, I will be taking a look at the right hand side. Is this something that you have seen before or something similar that kind of comes to mind?

Speaker 2 (Participant 7)

No.

Speaker 1 (Sophia)

Okay. Yeah, so we will be taking a look at the right hand side where it focuses on the maturity levels of digital transformation. So here they're a bit more explained in further detail for each level, going from incomplete to innovating, starting with no digital transformation to, yeah, very mature. If I were to make the statement that I believe that RHDHV is at level three, what do you think about this?

Speaker 2 (Participant 7)

Yeah, I looked at the model in preparation of this meeting and it's tempting to say that we are at three, but I think we might even be at level two.

Speaker 1 (Sophia)

What will your arguments be to place it at level two? For example, what do you think that we are still missing to reach level three?

Speaker 2 (Participant 7)

Well, if you look at level three is about integration, organizational change management, those kind of things. Sustainable learning, well, I think those are aspects that we are striving towards but definitely not have achieved to the level that we want. So I think we are in the middle of that integration and trying to get change management in the company at the right stage. So, yeah, the question is, are you then in three or are you working towards three and therefore in level two? So that's a bit of perhaps how you apply the model.

Speaker 1 (Sophia)

No, in terms of this research, I would say that we would need to pinpoint where we are right now. And of course, yeah, we strive towards a higher level, but it's really pinpointing where we exist now at a specific level. Okay.

Speaker 2 (Participant 7)

But then say we are at level two and we aim in our activities to level three.

Speaker 1 (Sophia)

Okay. So we're just in that bridge. So shifting a little bit of the focus to business process management. What's your previous experience with it? Do you have any experience with the company as well?

Speaker 2 (Participant 7)

Yeah, mainly within our company, but also with. Well, no, mainly within our company. Within the business line Walter and Maritime, we worked on business process mapping and also in my current role, I'm supporting the business process mapping on a corporate level.

Speaker 1 (Sophia)

So I was not able to find any maturity model that took a look at the digital transformation, but also the BPM maturity at the same time. So what I have done is created a quadrant model. I'm taking a look at the digital transformation maturity on the horizontal axis, referring back to level one to five from the previous model and then looking at BPM maturity from low to high, where I identify low maturity as where processes are very undocumented, they're not standardized and there are no KPI's measuring the performance, whereas high BPM is a standardized process with continuous improvements and data driven decisions. Where would you, or does this make sense to you? Is there something that is lacking from this model?

Speaker 2 (Participant 7)

I did some research on business process maturity as well, because for the work that I need to do, it's also relevant to measure where we are and where we need to go to. And I found just by googling that there are some models available which actually also define a five level stage. So I would actually advocate to see if we can expand a bit this. So instead of low and high, we also have a five level skill for business process maturity. And what I've seen so far is that there seems to be a logical correlation also in the levels because when there is an increase in your maturity, it's easier to automate and to accelerate actually automation and integration. So yeah, I think it will be worth to look in that in a bit more detail. I will share with you what I have found and then.

Speaker 1 (Sophia)

Yeah, yeah, sounds good. And then looking at it right now in this scenario, where would you place RHDHV in which color block in terms of our current state? On a more company level. So not a specific business line.

Speaker 2 (Participant 7)

Well, I found it a bit hard to understand this model, but as I mentioned, when it comes to level of digital transformation then it's about two. And then the remaining question is do you consider the business process maturity level low or high? Then I think we are again on two or three. So it's not high yet, but it's not low and low. So it's probably a bit on the orange part still.

Speaker 1 (Sophia)

Well, thank you for the feedback on the model. It is indeed still in progress. So I will take a look at that. Yeah, please do.

Speaker 2 (Participant 7)

Because I think it might help to get this clearer and also make it more interesting. If you have two times five levels which you can combine, then perhaps it makes more sense for you as well.

Speaker 1 (Sophia)

Yeah, yeah, that makes sense. So next, what I've done is, due to time constraints, I'm only taking a look at the most ideal scenario, which would of course be, for both maturities to be high or level five, as indicated by the RHDHV logo. So what I have done is created a kind of a checklist of each item and artifact and prioritize them based on my own experience, but also research that I found of items that I believe need to be in place for to be considered in the ideal scenario. So looking at this checklist of, for example, the clear vision and the leadership and everything down, I think you probably have read it before. Do you agree with the checklist?

Speaker 2 (Participant 7)

What does the check mark mean that we have done that or is that in place or.

Speaker 1 (Sophia)

Well, no, it was mostly a visual thing. It's mainly things that need to be completed in order to be considered in the dark blue square. But it's just items that I think need to be in place. What are your thoughts on this?

Speaker 2 (Participant 7)

Well, we are working currently on identifying a tool that can help us with creating business process maps. And we are also considering what is needed for a more business process organization. So a more process minded organization. What does it mean in terms of behavior or proactiveness of process owners? So I think that would be interesting to see if that is included in here as well. You could say it's part of the mapping, but I think it's an essential point that you also have tooling to support the activity in itself. So looking at people process technology. So yes, you need to have a strategy and you need everyone involved, but then when it comes to the practical side, you need to look at what do we expect from people behavior, what are the tooling that we need to put in place to make it happen, and what is the process in terms of partly the maturity, but also part of how do we want to map. What level of detail to what level do we want to map the process out?

Speaker 1 (Sophia)

To reiterate because you mentioned the people processes technology, how do you think that we are currently doing that in terms of priority?

Speaker 2 (Participant 7)

Well, often in the past, technology was getting more attention than the process and the people part. So that's part of the culture change and the digital transformation that we are in now, that we are putting more emphasis on the process and the people. So before we develop technology, we want to be clear on what the process is. And when developing or writing down a process, we want to ensure that the right people are involved, not only at the end, but as soon as possible. Yeah. Do the right thing. You don't get that people experience, not invented here, but they are ambassadors more or less from the start.

Speaker 1 (Sophia)

And this checklist has a very top, bottom or top down approach. So starting off at the vision and leadership and then becoming a bit more specific. What's your opinion on the top down versus bottom up approach?

Speaker 2 (Participant 7)

What we currently do when it comes to business process mapping is actually both. So we have a corporate project which is on mapping out and setting the structure and governance for the cross business line and corporate processes. And in parallel we have a track where we announce and want to accelerate a top down. Sorry, bottom up approach where business lines and corporate groups create their own processes in addition with more detail or. Yeah, from the corporate ones. So it's a combination of both and combining the outcome. Yes. It has to do also with one end you want to set the boundaries for the

company in terms of ways of working and on the other hand you want to ensure that there's value of what we map for ourselves, but also towards the clients and that needs to come together and. Yeah. Therefore you need to have that two way approach to make it work.

Speaker 1 (Sophia)

Okay. Yeah. Because going back to the checklist, you mentioned that a kind of a tool needs to be added to each step on how it's going to actually be taken out or taken care of. Because of the practical implication, it doesn't.

Speaker 2 (Participant 7)

Have to be for every priority in it, but just the tool as itself to help. Actually the process is what I wanted to.

Speaker 1 (Sophia)

Okay, yeah. Where do you, or do you agree with the prioritization that I've done? So first of all, to start there?

Speaker 2 (Participant 7)

Well, what we have done so far is actually priority five increased because that was a key thing of lacking. That's the reason why we didn't have, well, processes, because there's a lack of ownership. One of the key things we initiated was, okay, we need to rethink that RACI, we need to reevaluate who should be the owners. Yeah, I think that could be higher up the hierarchy.

Speaker 1 (Sophia)

But my question is then how would you move that up if you don't know what's in each business, like in each business step?

Speaker 2 (Participant 7)

Well, for example, if you look at four and five, how do you know which processes you want to document if you don't know the owner? So you first define the owner and then the owner can then. Yeah, well it's a bit of chicken in the egg because you could say, well, if you don't know the process, then you can't find the owner. But in general it's a bit of iterative approach probably.

Speaker 1 (Sophia)

So they're more of a parallel steps.

Speaker 2 (Participant 7)

Yeah. Initially you start with, also when it's a project, you start with a project manager who takes ownership and then he defines what is it that he's going to do. And also for when it comes to process

mapping, you first define an owner who's overall accountable for the whole stuff, and then he defines what are the layers. So you have top layer and the main processes, and then you have supporting process, for example. But then for the main processes there should be owners who will work out in detail what the process should be about.

Speaker 1 (Sophia)

And with this checklist, where do you think that RHDHV is getting stuck or where are we working on?

Speaker 2 (Participant 7)

Well, as mentioned, we are currently working on a priority five, so that was recently shared and embraced by the Stronger 25 portfolio board. And then the other part that we are in is the procurement of a tool that helps us to create and manage the processes. So we have already mapped quite some. We still need to map a lot more, but a tool to help us out will definitely help.

Speaker 1 (Sophia)

And also from what I'm understanding, taking the more people process and then technology part rather than the other way around. You mentioned culture a couple times. How do you think that culture fits into the whole digital transformation initiative?

Speaker 2 (Participant 7)

Highlighting ownership and what you expect from an owner is, of course, touching upon the culture as well. What culture is about? Behavior is about how someone acts, but also how you act or behave to each other. Do we speak up when someone doesn't take ownership? How strong will we push an owner to take action in terms of creating processes and acting? If you launch a process, to what extent do we want to measure and capture that people have read it? You can make it mandatory. You can force technology that people have done it, for example. Well, those are cultural things. Do you want to go that far or not? Perhaps in the UK they consider, yeah, it's logic. You should have marks. In the Netherlands, we are much more. Oh, we are not used to that. We do it more on trust. And if you don't do it, then it's your pain. That's a balance within our company, where you've multiple cultures, multiple ways of working that you need to define the best way to get the best result. Yeah. So, yeah, it's to identify what the culture currently is and see what you need to want to change, where you need to change it towards a new situation.

Speaker 1 (Sophia)

Because culture, from my experience, goes together also with change management, which is a little bit outside of the scope of the project, but indeed it's highly linked from also what I'm hearing.

Speaker 2 (Participant 7)

Yeah, true. And sometimes also people say, well, culture is not something you can do, but, yeah, it's a combination of a lot of things. So, yeah, you can change a lot of practical things to change the culture.

Speaker 1 (Sophia)

Okay. Is there anything else that I didn't touch upon that you want to share with me or do you have any feedback for me as well?

Speaker 2 (Participant 7)

Well, you mentioned in the information you shared up front specific questions about the risk assessment process and for me, the link with what you've shown so far is a bit unclear. And secondly, risk assessment process is quite a broad term. There are a lot of risk assessment related topics you could touch upon in a process. So I was also interested if you make a link, which kind of risks are you then aiming for?

Speaker 1 (Sophia)

So when I'm talking about the risk assessment process, I'm mostly focusing on the project related risks that are fed into the drive to win process. And that aspect of our risk managers looking into and checking the risks that are indicated per project, how they're being recorded and how people are actually taking that part into consideration when inputting their proposals and their information. So it's very specific into that aspect because I do have some people that I'm interviewing that are working with the risk assessment process.

Speaker 2 (Participant 7)

And even risk assessment, diverse risks. So are you touching then upon all the project related risks? So time, cost, health, safety, whatever.

Speaker 1 (Sophia)

It's mostly about how we do the risk assessment process within the company. So not specifically risks for projects, but just how they're being recorded and whether it's being thorough enough and how our employees believe that the risks are being monitored but also recorded and whether it's working for us, whether it's just something that people do just because they're told, as you spoke with before, like this needs to be done, so let's do it. And what people think that can be improved or what's kind of lacking.

Speaker 2 (Participant 7)

And are we then talking about recording the company wide or I should say company related risks like information security or legal aspects or is it more the technical project, technical content related risks in terms of the material that you use or the complexity of a certain task?

Speaker 1 (Sophia)

No, it's more of the company related. So legal and information security related risks. Anything else?

Speaker 2 (Participant 7)

No, I don't think so.

Speaker 1 (Sophia)

If anything comes up, just let me know. I am still working on it and interviewing people. So there is still time for improvement.

Speaker 2 (Participant 7)

Yeah. Well how long do we have?

Speaker 1 (Sophia)

Still have, oh, I booked the meeting until 930.

Speaker 2 (Participant 7)

But yeah, what I can do is I can share with you what I found on the BPM maturity level. One moment. I just shared with you by email two pictures as well as links. So the sources where I got those pictures from slightly different angle but both referring to five levels. And if you look at the description then you see also link with automation, integration of activities accelerating your digital transformation actually.

Speaker 1 (Sophia)

Yeah, that makes sense. I've actually taken a look at those models but I never really thought about putting them in the. Yeah, in my model but I think it's a good feedback to consider and refine as well. So I will take a look at that. So thank you for your input because.

Speaker 2 (Participant 7)

Also if you look just for the digital transformation where you have those five steps, it helps to level where do you think we are and what is it that we have ahead? What is the first, next step? Yeah, like we debating at the beginning, are you at level two or is it level three and what is it that we are aiming for and what is next that really helps in again leveling everyone on. Okay. This is the job to be done not only tomorrow but also more in future. We are not done yet. I think with low and high for business process mapping. I think it's a bit limited. And when you have a five skilled approach, just like you have to do with the digital transformation, then you have that same alignment option that you can say, hey, where is it that we are? What is it that we need to do? So, looking at the five skills for BPM, then I think the part of capturing the processes in a more structured way, like is mentioned in the table. I think that is what we are at that two, level three. We are working towards level three. Ideally, we already touched upon next steps like that. You can add data also to a process and then you can therefore monitor and optimize the process. So, yeah, it's good to have that potential a bit more clear identified.

Speaker 1 (Sophia)

And in your opinion, because you mentioned data being linked to the processes, if you have the people, processes and technology, would data be another pillar or would it be under one of the existing ones?

Speaker 2 (Participant 7)

Data is everything in all, okay. Because data is in. You have data about people, you have data about the process, you have data about the technology, you have data about the business. So, yeah, it's everywhere.

Speaker 1 (Sophia)

Yeah. Is there anything else that you want to add?

Speaker 2 (Participant 7)

No, I think that's about it. And, yeah, if you would like to have another follow up meeting, then I'm happy to do that. And, yeah, and if you are. You had one moment in time, change the model and you would like to verify whatever, then happy to provide feedback as well.

Speaker 1 (Sophia)

Okay, perfect. Well, thank you very much for your time.

Appendix I - Interview with Participant 8

Speaker 1 (Sophia)

So once again, thank you for taking the time to have this interview with me. Just a little bit of a background about the project as a whole. I'm doing my master's thesis at the University of Utrecht to try to look at digital transformation maturity and business process management maturity and how those two concepts or initiatives are linked to each other. And currently I haven't found a lot of research on it as it's a pretty new topic. So I went about it my own way a little bit, as we all do. Yeah. And then just trying to get your feedback and input about how you perceive these topics and how you see it as within the company. Just to start off, if you could introduce yourself with what you do within the company, how long you've been working here and just what your role is.

Speaker 2 (Participant 8)

Yeah, I'm Participant 8. I worked for over six years at the Royal Haskoning DHV. Before that I worked for 15 years at Deltares. Since I work here, I've been working on digital tooling, digitization, and currently I have a role as the Digital Lead for climate resilience. At the company we have different kinds of topics and we also have different digital leads on those topics. And I also run our digital talent program in our department of water and Maritime, where we. We hope we have some young experts on water maritime disciplines who also want to develop their digital skills. We teach them in our program how to do so. And it's not just the technical skills, but also how to convince your colleagues to use it. It's the implementation part and also the budgeting, finding your sponsors. How do you do that in a big company like this? So it's a really from the beginning until the end process, not just a small part of it. And of course, and we teach them to have fun and that we do not all have to be developers. We need everybody to make this work. So even if you do not want to learn Python, you still have a role to play in the realization of our goals. So that's why we work in mixed teams then on different kinds of challenges, and then they have to present it after a certain month. I think learning by doing is faster than just following a set of courses. And in this way, they can also create their own internal international digital network. And it's really great to see the people from the Philippines and Indonesia work with the people from the UK. We even have participants from Mozambique this year and Peru. So it's just really nice to see how that works. To get everyone to collaborate and get different ideas flowing.

Speaker 1 (Sophia)

Are you familiar with the digital transformation initiative within the company so far? In your opinion, when you think of the concept of digital transformation, what kind of keywords or concepts stand out to you?

Speaker 2 (Participant 8)

Yeah, I'm not really good with words, so this takes a bit longer. I think I'm more of a visual thinker. I think in order to do this properly, we have enough smart people who can think of nice ways, but we have to make sure that the basis is strong, and that is that we can find our data and also our historic data to be able to learn from that, and that we, for some parts of our work, we standardize part of our processes. And for me personally, I do not want to focus only on automation and standardization and information

management, but there should be room for innovation to do things differently. And sometimes we focus too much on this is the way our process works and we're going to automate and standardize it. But maybe you could also do it differently. And so there should also always be room for that.

Speaker 1 (Sophia)

So in terms of my research, I saw a lot of previous researchers define the concept of digital transformation in their own words, but I never found a definition that really fit what I needed it to really expand upon. So the definition I came up with was digital transformation as a strategic and sustainable initiative for redesigning business and operational models. And that's done by creating value and enhancing user experience, by combining the digital technologies key resources. And in this context, I mean, people and employees and then their capabilities, so their skills. And as we spoke before, no. Do you agree with this definition? Is there something that stands out to you that you think is important to include?

Speaker 2 (Participant 8)

I think what you mentioned, the key resources are the people. I think that is important because also in our company, as an example, we can build tools, digital tools, to improve certain parts of our processes. And that's not the most difficult part. The most difficult part is to convince all our, whatever, 8000 colleagues or parts of that to also start using that.

Speaker 1 (Sophia)

So it's more of, from what I'm understanding, the adaptation to the new technologies and the new ways of working.

Speaker 2 (Participant 8)

And also in such a large company, to make sure that we are not developing the same things five times in different places. And that's it. We try to be smart and learn from each other and be as modular as possible.

Speaker 1 (Sophia)

So in the context of my project, I am going to be using this model for digital transformation and maturity, mostly focusing on the right hand side. So you have maturity levels one through five, starting with initiated and ending at innovative. Is this model familiar to you or have you seen a similar model beforehand?

Speaker 2 (Participant 8)

Maybe. Maybe I've seen this one, of course, in the material you sent me. And we have KPI's on maturity level and we have other steps and things a bit more detailed than this, for instance. So, yeah, we've seen similar ones.

Speaker 1 (Sophia)

So looking at the right hand side for the digital transformation maturity, this is a little bit more detailed of the previous model, looking at the different levels and what kind of items need to be completed, so to

Speak, in order to really reach a specific level. From my personal experience and from my knowledge of the company, if I were to say that the company is currently at a level three, would you agree or disagree with this and why or why not?

Speaker 2 (Participant 8)

I think it's in phase three. So it's not yet. Yeah, of course it's not yet at four, but yeah, it's. I think I agree with that.

Speaker 1 (Sophia)

Okay. And for example, why do you think we're not at a four or a two? What kind of makes you pinpoint it at three?

Speaker 2 (Participant 8)

Well, at first, when we started five, six years ago started, of course, we are engineers. We've also, we've always been doing digital things. But when I started here, it was really looking for the ways to go and which language do we program, how do we deploy things? And everybody did that in their way. And you had money, you had budget to build your tool, but then the equal amount of budget was needed to find out the ecological of the digital ecology in which it should fit. And currently, as a company, we do things similarly in the same way. We combine things, we collaborate more with the different departments. So we have found a similar way of working, similar language and so on to do things on. And I think that is an important step. And I think that is why I think it's above two. It's not like, hey, we can build a tool, we can do this, we now know we can, and we reuse things from other departments and do it in a similar way. I've also created platforms for all the experts to work on to share things that also improved adoption. And the reason why I think we are not at level four is that we are still searching how we are going to make sure that all the data in our company can be used for all these things. Also the historical data. I think what we said when we started, this digital transformation, this is a good combination. It's digital. And our 140 years of experience all over the world in engineering. And I think it would be a really great opportunity if we can combine that also in our digital tools. But then we need to make sure that the data, maybe not 140 years, but at least in the past decades, can be reused. Can we learn from, because it's not just about calculating something at a certain place, a building, wave pressures, whatever, it's also about what that means in a certain location. And that's how our consultancies have always worked. And I would like to be able to have also that as a source, not just the numbers we calculated, but also how we advise our client? Because that advice is different in Mozambique than what it would be in Poland or something else

Speaker 1 (Sophia)

So from what I'm hearing from you is that we are not really making use of the data. So we do have it and we do use it to a certain ability, but there is still more room to actually apply it a little bit more.

Speaker 2 (Participant 8)

Yeah, there are ideas, there are plans to do this properly. We're not there yet. It's of course a bit of a slower process. It's quite a big investment, I guess.

Speaker 1 (Sophia)

And what do you think is kind of stopping us in that regard? Like the biggest challenge of us not really using the data to the best of our ability.

Speaker 2 (Participant 8)

I think that is still part of the standardization. We need to decide how we're going to store all that data in order to have access to it. And I think that is difficult. And it's also difficult because we work in this company on many different disciplines with all their own needs for this data. And also each phase of a project requires also different quality of the same type of data. So I think it is. That is what makes it difficult. And you want maybe one solution for the storage of your data and accessibility of your data for the whole company. But then how do you decide on that when everybody has different needs? And so what's the best way forward? I think maybe that's it. And we are working on it and there are great examples.

Speaker 1 (Sophia)

The next question that I have is, do you know anything about business process management? Are you familiar with the concept and, for example, the maturity models that exist?

Speaker 2 (Participant 8)

We've been working on business process mapping, so I'm assuming it's a bit similar.

And what I liked about it because I thought it was really difficult at first because I don't really like standardization. I like innovation more. But what it did was we could define, this is one of our main processes in our work. We could define not only the steps needed or the modules needed, we could identify, this is where we want to standardize and automate. We could request for budget, do this. And what it also did was mention, well, this is a large process, we have a digital platform to help us with that specific process, and we are not going to mention the ten different little tiny tools that's in there. But this is just one platform, and it's also more easy to price it, for instance, in our projects. And I think it helped not just the developers, but also the people working on projects. You cannot remember all these 11, 12, 20 tools that exist out there in your department, outside of your department, in another business line, everybody gets really confused, but just really focus on the processes and what's there to support. You digitally simplified it and also helped us to decide, okay, these are really important processes, let's do this properly, have the investment on these processes and optimize them to a certain point. And so I think this helped me as a digital lead in many ways to look at it in that way, instead of the, oh, new tool for this, new tool for that instead of having the very rigid way of working as before and have some more room to grow. Yeah, it showed that there was room to grow, I think, because then you would have some sort of a product owner for this digital support for the process. And then that person could decide, well, this module is the first and how to prioritize the things. There are lots of ideas, but you cannot do everything at once. And

then it became much more clear of what we are doing. We also need to collaborate on certain processes with a different business line, and then you need to know what you're talking about together.

Speaker 1 (Sophia)

So, yeah, now combining a little bit of both digital transformation and business process management, or mapping, as we refer to it in the company. I really had not seen any model with current research that combined the two concepts. So what I did was combine it in my own way in kind of a quadrant model. So I took some of the weaknesses of the current models that exist and created this quadrant where on the horizontal axis you have the digital transformation maturity from level one to five, as indicated by the previous model, we are taking a look at and business process management maturity from low to high. Where low I identify as where processes are very undocumented they don't, are not standardized and they have no KPI's to look for bottlenecks and how to be more reactive and yeah proactive and with high maturity being standardized processes data driven decisions and cross functional teams and collaborations. With this model in mind, where would you kind of place RHDHV as a company?

Speaker 2 (Participant 8)

In which color? I think with the business process management maturity we've started, we have some good examples but we want to, for instance, we have some knowledge groups for certain disciplines. We want them to take over and decide on which are the most important processes and use it and that's not established yet. So for business process management we are not high yet. I think we're in three. So I think it would be purple, maybe close to dark blue.

Speaker 1 (Sophia)

So on the right hand side of the model.

Speaker 2 (Participant 8)

Yes.

Speaker 1 (Sophia)

Keeping in mind the timing that I had for the master's thesis, I'm only looking at the ideal scenario. So the ideal scenario I've marked with the RHDHV logo now and I've created a kind of checklist with some artifacts that need to be kind of completed in order to be to be considered in the dark blue square. And I have prioritized them according to a top down approach. What are your thoughts on this? Do you think this is complete? Do you think that this prioritization list is correct or.

Speaker 2 (Participant 8)

Yeah, I agree that the KPI's are not high because we had KPI's, but they, and they were chosen because you could get something out of the standard data of our projects, but they did not mean anything to our colleagues and then you're not proud of a one or a two or three or whatever. So I think it's good to have them because you need to understand first how do we want to track this? And the KPI should mean

something not just for a BIM lead, but for everyone and that's really difficult. So I do know we have power bi dashboards already in place, but then because nobody understands. Well, nobody but a lot of people do not understand what they need to fill in for their projects. On the KPI topics, they don't get filled in, you get a zero, which is not true. So if you're going to track things with KPI's, you have to be really sure that the data you use it for is meaningful. And I don't think it is at the moment.

Speaker 1 (Sophia)

And when you mean that the KPI's need to mean something or you need to know what you're tracking. Is this for an individual basis? So, like, the employee needs to know how they're contributing to this and how their progress is contributing to the bigger company wide picture, or is it more on a project basis?

Speaker 2 (Participant 8)

Well, it is on a project basis currently, but the project manager needs to fill this out. So they need to know, what does this mean? And usually they are concerned with other things in the project than the digital maturity. But we need to explain first, why is this important and how do you contribute to your projects and convince everybody that they are already doing great things? Because great things happen in our projects, but nobody really shouts about it. My job is also to promote the great things that are happening. And sometimes I still encounter something that I said, wow, that's great. And then nobody tells anyone about it. So if we really want to track something on this, it should be really meaningful to the people who you ask, the contributions from. And if you want to get it out of general project management data. Should be general and not filled out by person, because then you first need to explain to the person what we're doing.

Speaker 1 (Sophia)

And you mentioned something that, okay, we are doing something great, but people are not aware of it. Do you think that's one of the challenges, the awareness and really bringing people to kind of adapt the ways of working?

Speaker 2 (Participant 8)

I personally really think that we should spotlight the things we do in projects, because, for instance, with BIM, how we use open BIM standards or ways of working, almost everybody thinks, oh, that's too much work. Let's not do it. While in practice, we are already doing things. And I think if we tell people, if you are already doing this well, and that's already the first step, great. And next project, try step two. So sometimes colleagues think they're starting at zero, and then it feels like a lot of extra stuff you need to do for your project next to all the things and the deadlines you already have, which I don't think is true. So the way I communicate about it is not about, oh, we're not there yet, and we still have to do this much. I always try to show, look what you're already doing. It's just a small step to the next thing. There's also a strategy on digital twins, while if you look in projects, we are doing things that are quite similar to that, and people in the workforce think, digital twin. That's such a word. I'm not thinking about it. Well, you actually can show well, you're already doing it even though you did not know it. And I think that's

important in this transformation that people do not think, oh, that's for the people in our company who like to do digital stuff. This is from all of us and we are already doing it, so don't be afraid.

Speaker 1 (Sophia)

And what's your opinion on a bottom up versus a top down approach? Because this is a very top down. So looking at leadership and having more overarching themes and then kind of getting more concrete, which. Yeah, which one do you think is going to be more sustainable in terms of applying into RHDHV?

Speaker 2 (Participant 8)

I think the ideas in our engineering company come from the engineers who see things happening in the projects and think of solutions there. What we discussed about the adoption, our company has high autonomy in a company if you work here, which is really nice, but it's really difficult when you want to improve adoption of certain standardized processes or digital tooling. And sometimes it would be good from top down if we hear a bit more sounds like this is now our new standardized way of working, you should use this because not everything is like your own choice. Sometimes we need to standardize our way of working, and there is enough freedom around that for our advice and work for our clients. But we do need to make sure that the digital developments we invest in that they are being used.

Speaker 1 (Sophia)

Yeah, because you also mentioned yourself that you do like innovation and you don't really like the standardization and standard processes. If, for example, someone from higher up had said, this is our new standard way of working and now you have to do it this way, how would your perception be of this? Or how would you kind of change your mind? You shift the mindset to that?

Speaker 2 (Participant 8)

Yeah, well, this actually happened because our manager of our digital team actually said, well, we're just going to do it, and every digital lead needs to have three examples by the end of the year. So then you do it and you make sure you have some good results. So I must admit I did it a bit on my way. So I quickly defined where the biggest pain points were in the process and then focused on what a good solution would then be. But other people, they tried to map the process as perfectly as possible, and then it took much longer because with a bunch of engineers, there are so many details that are then different. In this case, my goal was to identify where we put our investments on and what to develop on digital tooling in the process and to actually do that. My goal was not to map the process perfectly and I think that's a bit of a danger of this business, process mapping. If you are trying to do this as good as possible, you can spend six months because people do not have that much time on a nice process map. And then what? You have a process map, what do you do with it? Or you can make a less detailed bit of overview and make sure you can connect the details later on and develop things. And also you have to make sure that there is room for innovation and not to focus too much on the current process and the way we do things and have been done. Things have been doing things. So it did help me, but it's also a bit dangerous because you can get stuck in your old ways of working and you also need new ways of working.

Speaker 1 (Sophia)

And it kind of goes back to the adaptation and getting people to really accept it, except this way of working and getting them to really embrace change, so to speak.

Speaker 2 (Participant 8)

And it's not necessarily changed because if you ask everyone, the processes in a certain discipline group, they do things similarly, but still they do not want, maybe they do not want to feel that they have to do it the same way all the time. It doesn't have to, but yeah, everybody still wants to make sure that they are making a difference within their project and not just following a set of rules. Okay.

Speaker 1 (Sophia)

So they still want to kind of shine their individuality into their project?

Speaker 2 (Participant 8)

Maybe? Yeah, I think so.

Speaker 1 (Sophia)

Okay. And do you think that culture plays a role in digital transformation as a whole and the initiative over it?

Speaker 2 (Participant 8)

I think so. Like I said, there is a lot of autonomy in the company, which is good, which is also good for innovation, but it is difficult in the adaptive phase and there are a lot of teams here and it's really difficult to get users out of your own team. They did not invent the wheel. Some of our corporate tooling. Everybody is really bright here. It's nice. I'm an engineer as well. I know how they are thinking and they easily spot that it's not 100% perfect to your needs. It never is, and it cannot because things are changing really fast. So we have to be flexible and that flexibility should come out of the different individuals. But part of your work can be done in a standardized way, even if it's not 100% of your whole work. But I think we need to teach our colleagues to be smart in combining that, combining pieces of standardization with individual perfection, so to say.

Speaker 1 (Sophia)

And going back to the checklist that I have proposed, where do you think that RHDHV is kind of stuck or we can improve on if this was the ideal scenario.

Speaker 2 (Participant 8)

I think for two, what would really help me if leadership for some of our digital solutions would actually say, this is what we think we should use, we should all use it, or all because this is how it's going to help us. I think that would really help. So that's step two. And that they personally say that. So you can have a

stakeholder engagement plan where you mention it, but it's different when your boss tells you, and of course, we have to be careful with that. There's a high autonomy here. That's why we like working here. So we do not like our boss to tell us everything we have to do, but for some things, we really need to make that happen. Let me see. We have the business processes. I think it would be really nice if we could use the business processes for each project, that you use them for clash detection or something. Is this the process or is this different for our project? We have a good library for the business processes where everybody can find them, but we do need to make sure that people go and find them and find the necessity of looking at it, combining it within projects, or deciding on their strategy, for instance. And that's not there yet. So we need to do that as well

Speaker 1 (Sophia)

So it's also, from what I'm understanding, making employees aware of the resources that they do have at their disposal, rather than reinventing the wheel and really learning from each other, I think is a recurring theme that you're trying to get at.

Speaker 2 (Participant 8)

And it is quite difficult to explain how it will help them. In our organization, projects are the most important. So everything you want people to do, I think you should explain in such a way that it's helpful for the project. Otherwise it will be taken up maybe after a deadline, when there's not another deadline, but projects go first, so if you want something to achieve it. You're most likely to get it through the project.

Speaker 1 (Sophia)

I think those were mainly my questions. Is there anything else that I didn't touch upon that you wanted to share or any feedback that you have for me?

Speaker 2 (Participant 8)

Yeah. We talked about the KPI's ownership. I think leadership and sponsorship. And also maybe another thing that I'm really keen on is we have our own development team and make sure that part of the members work partly within their disciplines, within projects, within their group, and partly on developments. In that case, we make sure that what we develop is actually needed in the projects, and they also bring tools that their team hasn't heard of in the projects as well. So it also helps with adoption. And I do think these sort of hybrid colleagues people, it's quite difficult for them. You have your deadlines and you still have your development work, but I think they are really valuable for the company. And also in my digital talent program, I try to teach them how to do that, how to combine it and also to promote that. And how does this work with digital maturity? Well, yeah, it helps with the adoption and building the right things. Have your experts involved because otherwise you can build things that are not being used at all. And I'm really glad that we've established that we should make sure that we facilitate those people in doing their two jobs properly. Kind of validating that the work that we're doing and products that we're putting out are actually valuable for the market and they are useful and helping build towards a common goal. And understanding that it is. It takes up quite some energy for these people to do and

that they should be valued for doing something else next to their project work. I think that's really important.

Appendix J - Interview with Participant 9

Speaker 1 (Sophia)

For my thesis assignment, I am looking into digital transformation maturity models as well as business process management maturity models and how they overlap and identifying whether there is a connection between those two concepts and initiatives or whether they're completely separate concepts. You were kind of identified from another colleague that you have some knowledge on this topic so that's why you've been invited for the interview. To start off, can you please introduce yourself and your position within the company and how long you've been with RHDHV?

Speaker 2 (Participant 9)

Okay, so I am Participant 9. I currently hold the position of Project and Technical Excellence Director for Southern Africa. So I have been with the company 30 years. Probably longer than you've been alive. I've been with the company, not always in the same role. But anyway, in my former life, I was DBU for Transport and Planning Southern and East Africa. But actually it was Southern East Africa, Middle east and India at one stage. So I actually have a roads and transport background and a project manager. So I'm a civil engineer by training. Civil engineer by training. I'm a roads engineer by passion, and I am a project manager and a contracts manager by necessity.

Speaker 1 (Sophia)

So you're a little bit of everything within the company.

Speaker 2 (Participant 9)

A little bit of everything. You get a lot of that in South Africa. You have to be. You hopefully have to be more than a jack of all trades. It was the advantage of growing up in a smallish company where, yeah, you were expected to do everything. Take the project from inception right through to final completion. One person. Obviously with a team, but you had to head that team up, manage the team, manage the construction, manage everything. So that's the way it worked. Then you enter a big corporate thing and somebody wants to put you in a pigeonhole somewhere.

Speaker 1 (Sophia)

All right, well, I think this is going to be quite the insightful interview since you've been in various positions and still hold those positions within RHDHV. So you've seen a little bit of everything. To start off, are you aware that the company has a digital transformation initiative that's currently being rolled out and in progress?

Speaker 2 (Participant 9)

Yes, very much so. I mean, I used to be part of the DWOW (digital ways of working) group way back when it was first established. Yeah, that's been going on for quite a number of years before COVID Yeah, we measure everything by Covid.

Speaker 1 (Sophia)

The pre Covid era and the post Covid era. And how would you define the concept of digital transformation in your own words or what kind of concepts or words pop out when you think of this?

Speaker 2 (Participant 9)

For me, digital transformation is the leveraging of digital tools and solutions to make our work more effective and more efficient so that we can do more with less, we can work smarter, we work quicker and make less mistakes, hopefully. Some people see it as a complete change in the way we do. I think it's just using tools to work smarter.

Speaker 1 (Sophia)

For the purpose of my research, I did not find one cohesive definition that I really liked in terms to use as a basis for the word of digital transformation. I came up with my own definition while combining a lot of previous definitions that are out there. So I defined it as a strategic and sustainable initiative concerned with redesign of business and operational models, and then with bringing in value and enhancing user experience by using digital technologies, key resources, which in this context, I mean the employees or the people that are carrying out the tasks and their skillset or their capabilities. Do you agree with this definition or not?

Speaker 2 (Participant 9)

It does align with what I said, just in nicer words but it's essentially the same concept.

Speaker 1 (Sophia)

And do you think that the wording is clear enough? Is there something that may be a bit ambiguous?

Speaker 2 (Participant 9)

I saw the definition when you send through the information for this meeting, I thought it's one of the better definitions that I've seen, actually.

Speaker 1 (Sophia)

I tried to combine all of the things that have been kind of repeated throughout research, but also some of my personal views. So there is some bias involved here. I think that kind of captured the essence of it without stretching it too much, but also keeping it concise. So as I mentioned, I'm looking into digital transformation maturity models. So when I did this research, I started off with this model, which I'm not sure if you have seen before this meeting, but it's called the digital transformation capability maturity model. So it combines the digital transformation process levels with the capability levels. However, for the purpose of this research, we're only going to take a look at the right hand side, going from maturity level initiated to innovative, which focuses on the digital transformation aspect of it. Have you seen this model before?

Speaker 2 (Participant 9)

It looks like what we based our model on if I understand things correctly.

Speaker 1 (Sophia)

Now taking a look at the right hand side, I've used the more broken down definition of the different levels and what kind of criteria needs to be met in order to be considered at a specific level. So if I were to make the statement that RHDHV is at level three, and when I say RHDHV, I mean the company as a whole, so not a specific market or business line would you agree or disagree with the statement and why or why not?

Speaker 2 (Participant 9)

I would disagree. I don't think we are yet at level three, I don't think we certainly do not have standardized processes and procedures in place. And it was one of the things that prevented us from actually implementing an EDMS system for the company because the vendor also felt that our maturity level was not high enough yet. So I don't think we're at level three. And in fact I think there are parts of the business that are not even at level two yet. We are still floundering around in between levels one and two.

Speaker 1 (Sophia)

And if you had to put the company in one of those categories, and because you mentioned that some people are not at level two, would you put it at level one then?

Speaker 2 (Participant 9)

I think we probably generally, if you have a look overall at level two, but there are certainly pockets that need a bit more work and guidance than others.

Speaker 1 (Sophia)

And besides the standardized processes, which I do believe is a quite hefty and important part of that transition to level three, is there anything else that you think that we are lacking or we need to improve to reach level three?

Speaker 2 (Participant 9)

It's to do with, in my view, commitment, the commitment of the business as a whole. And it doesn't mean that people aren't committed to moving in maturity, but it's the support and the impact that comes from senior management that are often found lacking. Where there is a reluctance to say thou shalt do this, or, yeah, we'd recommend you do it this way, but if you don't feel like it, don't worry, nobody's going to judge you. Of course we're going to judge you. So, yeah, at some stage the company needs to put a stake in the ground and say this is where we want to go and this is how you're going to work to get there. And it's not optional. And I think that for me in a lot of instances, what is lacking is that real management commitment to driving the process forward.

Speaker 1 (Sophia)

And it's mainly support from the very top management or is it also middle management, in your opinion?

Speaker 2 (Participant 9)

Depends what you would, would you class very top management, but it's from business line director and above. I think mostly when you come to DBU level, there is a lot of commitment there and a lot of drive. And certainly at DAG level, people want to embrace these things because they can see the value in it, but there's not the decisions being made that this is how we're going to do it, this is how we're going to get there. These are the systems we want to use these, etcetera. Nobody seems to want to make those decisions overall as a company.

Speaker 1 (Sophia)

Yeah, that makes sense. And because you mentioned that you believe that there should be more of a kind of put your foot down approach of you need to do this rather than more of a suggestive approach. Do you think that maybe culture plays a role in this?

Speaker 2 (Participant 9)

Oh culture very much plays a role in this and it's something that non Dutch people struggle with very much. Is this whole older mentality that everything becomes a community decision at some stage. Somebody's got to make a decision about direction, about systems, etc. What you're going to do otherwise you're always going to flounder there because there's always going to be people that would rather do it the way they've always done it.

Speaker 1 (Sophia)

Yeah. So that kind of touches upon change management as well, from what I'm hearing.

Speaker 2 (Participant 9)

Very much so.

Speaker 1 (Sophia)

And that, you believe, is one of the things that we're still lacking in terms of maturity then.

Speaker 2 (Participant 9)

Yes.

Speaker 1 (Sophia)

And kind of shifting gear from digital transformation towards business process management. What's your experience in that field?

Speaker 2 (Participant 9)

You say business process management?

Speaker 1 (Sophia)

Also within the company, I think the concept of business process mapping is used in corporate speak.

Speaker 2 (Participant 9)

Yes. It's, it's all related. At the end of the day, I think we're trying hard to get there and the Enterprise Architecture board was a good step forward in trying to get there. But again, for me, it all comes down at the end of the day, whether we talk in digital transformation or we talk about business process management, it comes down to the same thing at the end of the day, whether we like it or not, somebody or some body of people needs to make decisions and drive that change.

Speaker 1 (Sophia)

Because I was looking at both digital transformation maturity and business process management maturity, but I did not really see a model that combined those two concepts, which is the major focus of my thesis, I actually made a quadrant model myself. So looking into digital transformation maturity from level one to five based on the criteria that I previously showed in the slide, and on the other axis, having the business process management maturity from low to high and low business process maturity, I consider where processes are very informal, undocumented, don't really have standardization, and there are no KPI's to keep track of bottlenecks and having a more reactive approach, whereas high BPM, I considered more standardized processes, data driven decisions and collaboration between teams. Based on this information, where or in what color quadrant would you place the company as a whole

Speaker 2 (Participant 9)

There's a different difficult thing, because if you look at digital transformation, where, as I said to you, we're probably sitting at level two in terms of process management, I think we're slightly more ahead. So I would probably put us in the light blue block.

Speaker 1 (Sophia)

Yeah, because I'm asking because previously you mentioned that we are lacking a little bit of standardization in our processes, but now you're mentioning that we're more ahead in our digital transformation. So I was just trying to understand how you made that connection.

Speaker 2 (Participant 9)

A lot of strides in that. I mean, in the whole IMS project, the integrated management system project, in trying to get standardized approaches in place and agreed and whatnot. We are getting there, but we're not at a point yet where I would say we've got a high level of maturity, but we're. I would say we're. We might even be a two and a two or a two and a three. And that's what I was saying. I mean, we could be in

no man's land, sitting there at the crossroad in the middle. And that's why I said the light blue box, probably on the border of the orange and the light blue block, is kind of where we sit.

Speaker 1 (Sophia)

Yeah, that's clear. And for the purpose of my research, due to time constraints and my thesis only being nine months, I decided to explore the ideal scenario. So I marked it with the company logo in the top right hand corner. So that would be high business process management maturity, but also digital transformation maturity. And I proposed a checklist of items that I believe need to be present or accounted for to reach that point with an artifact that kind of gives the item a little bit more substance. And I prioritize them from a top down approach, starting with a clear vision, going into support from leadership, whether business processes are compliant with regulations and standards, then those processes are well documented and there is a ownership established for each process and then every process is kind of measured with KPI's to check performance and then having the culture of continuous improvement. Do you agree with the prioritization of the top down approach or is there something that you believe maybe the bottom up is more effective or what do you think in terms of what would work best for our company?

Speaker 2 (Participant 9)

It's difficult to say because your priorities, 34567, those are all currently being worked on different levels of success in them and well supported people really driving them. It's number one, the clear vision, I think is there, but the strategy in place prior to implementation. I think that's where we fell. We focus on the individual components, getting the processes compliant, getting the processes documented, everything. We forget what is the strategy at the end of the day, how are we going to get there? What are we going to do? What are we going to put in place to support all of this? And that is, I think, where we fail and then the leadership actively supporting. And to me, those two, and that's why it's good that you've put them as priority in one and two. Without those two, the rest is meaningless because the rest then just becomes something that's adopted by those who are in the loop and who agree and the rest just carry on doing what they want.

Speaker 1 (Sophia)

And do you think maybe for our company it would better to have the bottoms up approach then? So start from the employees and try to move up since we are lacking on priority one and two.

Speaker 2 (Participant 9)

I'm not sure that you can, something like this you can actually implement from. Certainly you need to get opinions and input from the business. Most definitely. That goes without saying. But actively driving it and getting it implemented, that has to come from the top. It can't come from the business when you can't go and tell the CEO what to do. So, yeah, I mean, we need these. And for me, it's also the concept of leadership, because a true leader, once you've established a path and a direction and whatnot, whether that leader 100% buys in, 100% agrees or not, that leader should 100% support and throw their weight

behind it. And that's what we don't have in this company. You have leaders trying to prove that they are better than other leaders or their ideas hold more weight. So we don't have cohesion there at the very top level. It's almost like we have five distinctly different businesses, they all believe that they should be able to run the way they want to run.

Speaker 1 (Sophia)

Yeah. So there's no, I guess from what I'm understanding, there's no agreement between the different business lines as well, so therefore, there's no kind of umbrella cohesion. And based on the checklist, do you think I've missed something, or would you reprioritize the items in a different way in your opinion.

Speaker 2 (Participant 9)

I think they're prioritized nicely, and I think so. Said one and two are definitely, for me, the top priorities, because once you've got one and two in place, it's easier to get the rest in place, and the rest are already within RHDHV, being worked on hard, but the support is not always there. So this leadership actively supporting implementation, that's where I think the drive needs to come.

Speaker 1 (Sophia)

And because you also mentioned that leadership needs to be kind of divided, or maybe I made the assumption that leadership is divided between very top leadership, so the C position, so to speak, and then you have middle management. Do you think that needs to be distinguished in the prioritization, in terms of the language that I used?

Speaker 2 (Participant 9)

No, I don't think so, because it's leadership. At the end of the day, when it comes, we have a strange culture that only if you agree will you support, and that's not the way leadership always works, unfortunately. And that attitude is sometimes prevalent throughout all tiers of leadership. I don't agree that we should be going that direction. So I'm just not going to do it.

Speaker 1 (Sophia)

So there's resistance then, from, I guess, employees. Yeah, that's one of the factors that I could not really consider is the culture, because it becomes a little bit more cumbersome because it's very individual from a company perspective, but it's also a bit of a controversial topic to define.

Speaker 2 (Participant 9)

It's a difficult one, and it's a controversial one. And I think culture within our company is extremely difficult because we have such a mix of cultures. And even the cultures of the two companies, Royal Haskoning and DHV, were, in essence, quite different as well. I think we're still struggling with trying to merge two cultures, and then you have this added culture of the idea that everybody should have the right to say, no, sorry, companies don't work that way. In fact, there's very little in life that works that way. So, yeah, I think culture is a very big component of what is holding things back is this. And there's a very strong

resistance to change, and I think that can get sorted out. But there's also this culture of, well, unless I agree 100%, I am doing it and nobody can force me. And we see this all along. I mean, stupid things like within our Drive to Win process, you're supposed to use the Project Budget tool. Well, we're the only part of the company in South Africa that religiously uses the project budget tool because every other part said, no, we don't think that budget tool is useless. We've got a better tool and somebody else has got another better tool. So every part of the business using a different tool to do their budgeting on. Now, whether that's important or not, I don't know. But it's just a measure of the culture that unless you agree 100%, you're not doing it. And nobody's going to tell you it's compulsory, we advise you to do it, but nobody's ever going to use those words, it's mandatory or it's compulsory.

Speaker 1 (Sophia)

That's something that's come across indeed with other people interviews, is that our employees believe in individualism, and maybe they're afraid that's going to be taken away once the standardization comes in with the more strict rules and structure.

Speaker 2 (Participant 9)

And I get that because something that we should never take away is that individualism and that flair for doing something different. But even that needs to be structured. There needs to be boundaries of how you do that.

Speaker 1 (Sophia)

And you mentioned the Drive to Win process. So actually, a part of my thesis, I'm using this framework to kind of validate it on the project risk assessment module. And from my understanding, you are familiar with it and you do use it in your work, correct?

Speaker 2 (Participant 9)

Absolutely, yes.

Speaker 1 (Sophia)

So looking back at the same model that I showed previously, in which quadrant would you evaluate the risk assessment process? Currently?

Speaker 2 (Participant 9)

I haven't thought of it like that because it is a good concept, but I think from a process point of view, it's got a fairly low maturity and it's cumbersome, it's difficult to follow, it's counterintuitive in a lot of respects. So it would probably, in my view, be in the orange block.

Speaker 1 (Sophia)

And when you mentioned that it's difficult to follow and it's very cumbersome, do you think that's due to the education of people who are using it, or do you think it's due to technology that we are currently setting up the process in?

Speaker 2 (Participant 9)

I think it's due to the system that we're setting up the process in. So it's due to technology and the fact that we don't always use the technology. Now, I'm not a fan of drop down boxes and things like that. I'd rather see prompts, but it at the moment is fairly cumbersome and it doesn't provide enough guidance to people to do a robust risk assessment on their projects. It focuses also, in my view, and you can see it was designed by finance. It focuses more on financial risks than any other risks. Yeah, it's certainly, it's a good start, but again, it needs some tweaking and it needs to move with the time. When I said the orange, I think that the process from a business process, the maturity is probably higher than our use of digital tools in implementing the risk management process. I think we can do a lot better there.

Speaker 1 (Sophia)

Yeah. So in the higher end of the orange box then. You mentioned that indeed the technology is kind of stopping us in terms of progressing with the risk assessment procedure. Is there anything else that you think is lacking currently or that could be improved?

Speaker 2 (Participant 9)

I think there could be more prompts, more help within the system, but that's probably got to do with the technology that I think we can make it smarter, that here the platform should facilitate that if we're doing a project of one nature. It works from a database of known risks and prompts you to have a look at those risks, which this doesn't at the moment, other than the eight initial risk questions, which are already financial stroke company risks, not project risks that we look at, that it doesn't really prompt you for that. The other problem with the risk management, for me, it's not really a risk management tool as much as a risk identification tool because it hasn't got the capabilities in it to prompt you throughout your project to review your risks to have a look. Does this risk still exist? Has it changed? It's really based on identifying your risks at RFP, at proposal stage. And then it's almost like, well, we've ticked that box, so let's move on.

Speaker 1 (Sophia)

So there's no follow up to implementation. I think that was it from my end. Is there any feedback or anything that you want to touch upon that I did not mention or that you want to add.

Speaker 2 (Participant 9)

Would like to see how it's going along the roads because it's a very interesting and a very talked about topic. I think it could be of great use to the business and something that I'd be interested to see where it's heading.

