Utrecht University

Master Thesis

Future-ready organizations, what are they made of?

Mark Sorel
m.sorel@students.uu.nl
Student ID: 6489893
Utrecht University, Department of Science, Business Informatics

July 26, 2023

Supervisors:

1st: Nico Brand, Utrecht University
2nd: Siamak Farshidi, Utrecht University
Daily: Albert Sprokholt, Anderson MacGyver

Utrecht University

Abstract

This master thesis researches what it means and takes to be a future-ready organization. Since it is a relatively new concept, many interpretations and ideas around this term exist but an uniform understanding of this concept is still missing. This research aims to provide this uniform understanding by presenting multiple perspectives into this topic and unite them into one, creating a new conceptual definition. Following this definition, a list of organizational characteristics is made to use as a foundation for a model where organizations can assess their level of organizational future-readiness. Incorporating evidence from literature, expert interviews and a multiple-case study, this research defines what a future-ready organization is. The analysis of the design of other measurement models and their characteristics showed that organizations need to be measured on certain dimensions consisting of different maturity levels. A future-ready organization is one that has a high level of maturity in 4 dimensions, Adaptability, Digitalization, Culture and Strategy. With their underlying sub-characteristics, these dimensions are capable of positioning an organization's ability to be prepared for what is about to come. The case studies evaluated the model and the characteristics and concluded that the model and characteristics were accurate and usable. Therefore the conclusion is that a future-ready organization is an organization that is capable of dynamically adapting to a constantly changing business environment while maintaining its ability to innovate and deliver value to its stakeholders. The organizational future-readiness is dependent on their ability to adapt, digitize, develop culture and strategic alignment.

Keywords: future-ready organizations, conceptual definition, organizational characteristics, assessment model.

Acknowledgements

I would hereby like to thank my first supervisor Nico Brand, for always being available, providing quick feedback and introducing me to Anderson MacGyver and the topic of digital transformation. I also want to thank Siamak Farshidi for being my second supervisor and taking the time to read and judge my thesis. The next acknowledgement goes to my daily supervisor Albert Sprokholt, for always being enthusiastic about my ideas and guiding me and my research in the right direction. I also want to thank the consultants at Anderson MacGyver that took the time to participate in my thesis next to their daily activities, as well as the whole organization for the fun and instructive time there. The last thank you goes out to all my friends and family that supported me during this project.

Contents

List of Figures

List of Tables

List of Acronyms

AMG	Anderson MacGyver
IT	Information technology
BAM	Business activity model
MLR	Multi-vocal literature review
MRQ	Main research question
SQ	Sub-research Question
OFRAM	Organizational Future-Readiness Assessment Model

1 Introduction

In a constantly changing world, organizations are struggling to keep up with the changes which can happen to many different areas of a business. To combat the dynamic business environment organizations are looking for ways to keep up with or be ahead of the changes. Since an organization that wants to be digitally transformed needs to be ready for these unpredictable changes in the dynamic environment (Sia, Weill, and Zhang 2021), forcing them to make changes in their products to even organizational changes (Porfírio et al. 2021). Since the combination between business and technology within organizational design is crucial and with an ever growing digital world, many companies are looking to transform into a more digital version to be prepared for the future (Sia, Weill, and Zhang 2021). Enabling digital transformation to grow and evolve into a desired process for many organizations(Nanda et al. 2021).

There is no shortage in information about digital transformation, with loads of papers and companies diving into this subject. Digital transformation has been defined as *"a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies"* (Vial 2019). It is an essential process for organizations which rely on their technologies and strategies surrounding. However the importance of the organizations characteristics, like the management, the mission and the strategic management, are often overlooked (Porfírio et al. 2021). The relationship between these parts is therefore a key element to understand in the digital world. However with the relation between entrepreneurship and digital transformation there are some issues which prevent organizations to fully optimize the advantages of digital transformation and entrepreneurship to increase business values (Antonizzi and Smuts 2020).

Many organizations recognize the need for a digital transformation to prepare themselves for the future, but are often unaware of in which direction to take this process (Weill and Woerner 2018). Digital transformations focus on the integration of digital technology into all areas of an organization. But digital transformation requires a clear vision on the aspects that need to be transformed, supported by strong leadership that drives this change behaviour. In a world where many organizations are experimenting with it, digital technologies pave the way in creating opportunities for those organizations (Bonnet and Westerman 2020). However it is not just

technology, it is focused around an organization's strategy. It can adjust the way of working and how they create value for their environment. On top of strategy, digital transformation also has a cultural change which leads the organization to be more innovative and take risks (Nieuwmeijer and Sprokholt 2022). Next to the strategy, an organization's readiness is of importance for a successful digital transformation. An organizations readiness is their ability to exploit and organize their core organizational capabilities, resources, processes and culture, in an integrated way (Ike Orji 2019). However, the focus is important; no company can or is transforming in all aspects at the same time. But, the top organizations keep seeking for ways to transform their operations in this digital era. (Bonnet and Westerman 2020).
So the reason why to embark on this journey is clear, however the destination for most organization is still uncertain. Through the process of digital transformation many organizations are aiming to be future-ready. However what their definition of future-ready is a different definition than that of another organization (Sia, Weill, and Zhang 2021). There are many conflicting claims within this subject that makes it unclear to understand what an actual future-ready organization is. To give an example, there are claims that employees are the essential part of organizational change (Rakowska and Juana-Espinosa 2021) while others say that they are the biggest obstacle (Smith 2005). This research will help understand this concept better by developing a definition and a list of key characteristics for future-ready organizations.

This research is written in collaboration with Anderson MacGyver, which will be abbreviated to AMG throughout this thesis. Anderson MacGyver, founded in 2013, is a digital transformation & IT governance consultancy. Located in three countries, The Netherlands, Germany and Sweden, their main office is in IJsselstein. Their way of working is forged by and focused around scientific research, having created two models that are at the centre of most of their operations. With 10 years of experience with many different cases within the field of digital transformation, AMG puts academic research as a value closely to their core.

The layout of this thesis is as followed, firstly the research questions are introduced with the corresponding research methods in chapter 2. The overall relations for this research are shown in the conceptual model. The research methods themselves are

explained in section 2.3. After which the related literature is presented in chapter 3. The results of the literature review will be combined with results from the other methods in the results section 4. This section also present the OFRAM with the underlying design choices. The discussion, chapter 5, will then explain the possible interpretations for these results and introduce future research ideas. This thesis will end with the conclusion, chapter 6, which will answer the main research question.

2 Research Design

This chapter introduces the design of this research, starting by the presentation of the research questions and their relation to each other and the used methods. Followed by the explanation of the research methodology for this research and a description of all the used methods.

2.1 Research Questions

This research has as **the main research question *(MRQ):*** *What are key organizational characteristics that can classify an organization's ability to be Future-ready?* This thesis has it's main focus on identifying characteristics of future-readiness. These characteristics will be the foundation of a future-readiness model that will be used to position organizations on their future-readiness based on organizational characteristics. In order to help answer this question and provide a structure for this thesis, multiple sub-research questions(SQ's) are established:

- ***SQ1:*** *What is a Future-ready organization?*
  This question aims to create a better understanding of this relatively new term and create a uniform definition that will be the redlining of this research. Firstly, a concept definition will be formed by the available literature which will be validated by a set of expert opinions from the first set of interviews. The insights from these interviews can lead to adjustments after which a uniform definition of future-ready is formed.

- ***SQ2:*** *What are key concepts of other methods that measure an organization's capabilities?*
  The aspects and characteristics of existing methods, like maturity models,

organizational resilience models and digital capability frameworks, that are used to position an organization will be included for this SQ. The focus is on identifying key criteria which are used in these methods. These criteria will be used in the development of the model and as input for SQ3.

- ***SQ3:*** *How can the characteristics be ranked based on importance?*
  To get an overview of the importance of- and between the characteristics SQ3 is established. By getting expert opinions about this and doing case studies, a ranking could be formed to indicate which characteristics are more defining for/ present at future-ready organizations. By asking the participant to assign weights to the measured characteristic a ranking could be derived from listing the characteristics with the highest ranking to the lowest. With this ranking it might be possible to figure out a way to see create a better measurement method to assess an organizations ability to be future-ready.

- ***SQ4:*** *What is the relation between multi-modality and future-ready?*
  The idea behind this question is to find out how characteristics from multi-modality relate to the characteristics of future-ready organizations. By analyzing the business activity model(BAM), the characteristics will be compared and possible links will be explored. SQ4 will be answered based on the findings of the literature review.

- ***SQ5:*** *How to create a maturity model for future-readiness?*
  This SQ will help to get a clear image of how to construct a model that can be used in practice, with the gathered data upon till that point. With the results of the previous SQ's as the input, this question aims to create the actual model(s) with different layers. By reviewing literature, the generic model creation process will be defined and in combination with expert's opinions about what they would incorporate in such a model, the end model will be produced.

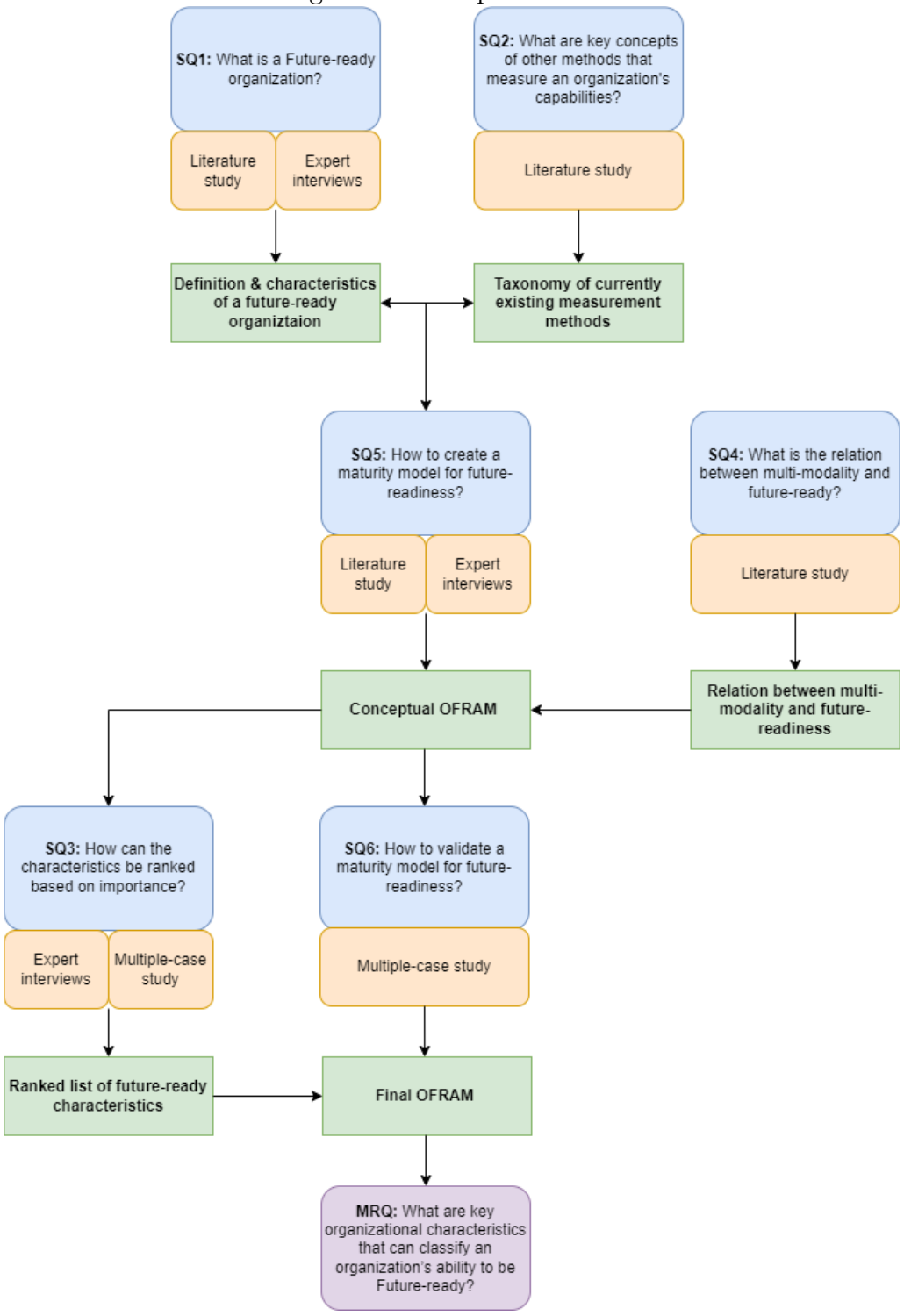
- ***SQ6:*** *How to validate a maturity model for future-readiness?*
  The evaluation of the model is a crucial part of this research's validity and end result. There is this question created and focused on how to correctly validate a model.

To answer these questions the usage of multiple research methods will be needed, which are extensively described in section 2. Table 1 shows which method(s) will be used for which research question. Naturally, the main research question will be answered at the end after all sub-research question heave been answered and thus using all the methods. Which is the reason it is not included in the table. To provide a structural overview for this thesis Figure 1 is created to display the relations between the research questions and artefacts. It starts with the background of the topic, which is the process of digital transformation. This process is supported by different methods to assess an organizations ability to transform, represented by SQ2. And by finding the definition and characteristics of future-readiness of the start(SQ1), a clearer picture of the wanted end result is created. The results of SQ1 & SQ2 are combined to create a way to measure the found future-ready characteristics and will be evaluated by expert interviews and the multiple-case study, which is represented by SQ3. SQ4 introduces another perspective into future-readiness by involving the modalities of the BAM model. By researching the known characteristics of the BAM possible links can be made to different maturities of future-ready. The answers to these questions will finalize the list of ranked characteristics per modality, which is the foundation of the to-be created model. The creation of the model is handled in SQ5. The last step of this research will be the validation of the model, which is executed by SQ6. After this last step the end artifacts for this research is developed and helps to answer the MRQ.

Table 1: Method(s) used to answer RQs

Research Question	Literature study	Expert interviews	Multiple-case study
SQ1	✓	✓	
SQ2	✓		
SQ3		✓	✓
SQ4	✓		
SQ5	✓	✓	
SQ6			✓

Figure 1: Conceptual model



2.2 Research Contribution

The aim of this thesis is to get a better understanding of Future-ready organizations and what characterizes them. This thesis will contribute to the scientific knowledge base on Future-ready organizations, by defining and ranking organizational characteristics and create a brand new model that can classify an organization's future-readiness. On top of this it aims to further scientifically substantiate the existing BAM. Next to these scientific contributions, it also has a societal contribution by helping organizations position their ability to be future-ready, by introducing the Organizational future-readiness assessment model (OFRAM).

2.3 Research Methods

This research is executed by following the design science research methodology from Peffers et al. 2007. This design science process, called the design cycle, consists of six activities, which are named and explained in the following subsections. This method fits this research since the aim of is to design and develop a new maturity model and the process of this method aligns with the steps that this research takes.

2.4 Problem identification and motivation

This activity is focused on finding and defining the problem that this research wants to tackle and justify that providing a solution brings value. The goal of this activity is to motivate both the researcher and readers to help come to a solution and helps to understand the researchers motives and existing knowledge on the topic. This activity is executed in the first part of the of the research and is based on the found literature.

For this research the problem definition is divided into two sections, the scientific problem and the societal problem. The scientific problem is that there are multiple views on digital transformation and the end result. Thus not being able to create an unambiguous definition of the term future-ready. There are also existing models which are derived from practical experience and are not scientifically proven to be defining for future-ready organizations. The societal problem is that because there is not an unambiguous picture of what future-readiness means. So, organizations cannot accurately position themselves in the process of getting future-ready.

2.5 Objectives of a solution

The objectives of the solution presented are based on the problem statement. For this research the objectives are to get a better understanding of Future-ready organizations and what characterizes them. A new definition for a future-ready organization will be established, following the method described by P. Podsakoff, MacKenzie, and N. Podsakoff 2016. As described in their method to develop good conceptual definitions, the definition should be made following these steps:

1. Identifying potential attributes by gathering a representative set of definitions
2. Organize the attributes by theme and select necessary, sufficient and shared attributes
3. Develop the preliminary definition
4. Refine the definition

This research will help extend the scientific knowledge base of Future-ready organizations. On top of this, it will scientifically support the existing model of the 9 aspects, described in Chapter1, used by AMG. Next to these scientific contributions, it also has a societal contribution by letting organizations position themselves more clearly and give a fundamental basis for ranking their priorities.

2.6 Design and development

This activity is the actual creation of the solution. The solution that is presented in this research is a model to help indicate the future-readiness of an organization, called the Organizational Future-Readiness Assessment Model (OFRAM). The main goal of this activity is to include the current theoretical basis surrounding this topic, that will be used to form the OFRAM. So after this step is the first version of the solution is ready.

2.6.1 Literature study

To complete this step the Multi-vocal literature review (MLR) method is used based on the criteria presented in Garousi, Felderer, and Mäntylä 2019. A multi-vocal literature review is a type of literature review that acknowledges and incorporates

multiple perspectives and voices in the analysis and interpretation of a research topic. This type of review highlights the diverse and often conflicting views in a field, and helps to shed light on the complexity of the topic being studied. This method also makes use of grey literature which is useful to include multiple perspectives.

Grey literature exists of multiple sorts of sources, as Adams, Smart, and Huff 2017 defines 3 tiers. The first tier of grey literature includes books, journals, government reports, think tank publications and more, this tier is classified as significant retrievability and credibility. The second tier is including annual reports, news articles, videos, presentations and company publications, and is rated as moderate retrievability and credibility. Tier three is classified as low retrievability and credibility and includes blogs, emails, tweets and more. This research mainly incorporates the first and second tier of grey literature to include white-papers and company presentations and publications.

For the execution of this MLR a series of steps to improve the quality of the literature search is followed. Rainer and Williams 2019 propose heuristics that help the sampling and filtering based on keywords. To get the literature search as efficient as possible the researcher has to fulfill some elements:

1. The first thing is the researcher already has a set of keywords related to the researched topic The main keywords that were used for the initial search are: *"Future-ready organizations, Future-ready characteristics and Digital maturity framework"*, expansions of these keywords were made by adding quality criteria explained in point four. From the resulting papers of these queries, the snowballing method is used to find more papers in that field. These terms were inserted in search engines as Google (for grey literature), Google Scholar and WorldCat.

2. It is possible for the researcher to distinguish different types of keywords, relating to topic or empirical keywords, where appropriate. So that there are not just results based on the theory but also on experience and empirical studies.

3. The addition of quality criteria in the queries can help the researcher find specific papers. These criteria include positive and negative reasoning indicators to help find both sides to certain topics.

4. The researcher knows the exclusion and inclusion criteria for the searches. The criteria for that were used to determine the results of the search were:

   (a) Date range: Since this is an exploratory study to this new topic the date range for the sources is unimportant. The goal is to find many sources that offer any insights into this topic.

   (b) Language: The results of the search had to be written in quality English.

   (c) File types: For this research only PDF or HTML-files were used.

These elements are corresponding to the steps of the search process of a typical MLR process (Garousi, Felderer, and Mäntylä 2019) and for repeatability should therefore be executed in the presented order.
For this research the number of papers that came out of the first step of the MLR resulted in a total of 1391 hits between Google scholar and WorldCat. This was filtered by applying the inclusion and exclusion criteria, as listed above, and by stopping the search after reading the abstract and keywords of the papers to assess the relevance and quality of the paper. This resulted to 143 usable publications for this research. These publications were then read and either used as a source for this research or used to snowball towards other publications that were not included in the initial publications.
The usage of grey literature was provided by searching the terms in Google, which initially resulted in millions of hits. For correctly executing grey literature searches, Garousi, Felderer, and Mäntylä 2019 stated that there are multiple methods to stop the searching process. Firstly, the searching process can be ended by reaching the theoretical saturation point. This means that adding new sources to the knowledge base does not add new findings. The second option is to rely on the search engine page rank algorithm, and choose to only research a suitable number of hits. The last option is to stop the search after the quality and availability gets below a threshold. For this research options 1 and 2 are used sequentially. Starting by relying on the search engine algorithm, only the first 10 results of a page will be researched. However the results must come from reliable and reputable source, which has experience in the field of this research. For this research sources can include, consultancies or institutions that have a branch within the digital transformation and digital capability topic. After this criteria is met, the searching process continues as long as new sources added new insights, and once the sources did not the search

for that term stopped. As mentioned above, only grey literature from the first 2 tiers will be used. In total the search process in Google resulted in 10 sources that were used in this research. Which lead to a total of 153 usable sources for the multi-vocal literature review.

2.6.2 Expert interviews

In addition to the MLR, expert interviews will be conducted with consultants of AMG. An expert is a person who has specialized experience and knowledge about the specific topic (Soest 2022). The interviews will provide a way to get an overview of the future-ready concept and highlight the differences in terms of understanding from different perspectives. The goal of these interviews is to gather insights of the consultants that will improve the theoretical foundation of the solution. They will be conducted with medior and/or senior consultants from within AMG. Since they specialize in digital transformation and IT governance, the consultants are knowledgeable in the topic and capable to participate in a discussion about a new term in this field.
The interviews will focus on the concepts and characteristics of digital transformation and future-ready and their experiences with them in practice. In these interviews the collected definitions and concepts are evaluated and updated if necessary. Also their opinions and definition of future-readiness will be discussed and used to create a uniform definition. On top of that they will also have to rank the characteristics in order of their importance to future-readiness. It will be a semi-structured interview, which is divided in three parts:

1. Background - The interview will start with a introduction of this research. To establish the experience and knowledge of the participants regarding the field of the study, the participants will be asked to introduce themselves and their related work experience. The goal is to establish a common ground so that both parties clearly understand each other.

2. The definition of future-readiness - This is the start of the interview where the created definition will be presented to the participant, with the idea to validate it. The participant is also asked to enrich this definition with their own version if they wish to do so.

3. Discussion about the characteristics of a future-ready organization - This part of the interview is focused on getting qualitative insights into possible future-ready characteristics. By presenting the list of found characteristics from the MLR the researcher and participant will discuss the relevance of the characteristics and possible adjustments or additions to the list.

The interviews will be held confidentially and made anonymous to protect the participants. The interviews will not be transcribed since the length of the interviews is expected to be above one hour. However the interviews will be summarized, summarizing interviews has multiple benefits over providing full interview transcripts. Primarily, summarizing an interview represents the main takeaways more concise and precise. Braun and Clarke 2013 states that summarizing interviews enhances readability and accessibility for a broader audience. Full transcripts can be overwhelming and lengthy, summarizing saves time and effort for both researchers and readers. Lazar and Feng 2017 also mentions the importance of a clear and digestible presentation of the interview to facilitate the dissemination of the main takeaways. Further, summarizing an interview also improves the protection of the anonymity and privacy of participants by removing potentially identifying details while still capturing all the important information. This method is also ethically sound, since it is highlighted by guidelines provided by institutions such as the American Psychological Association (APA 2020). They underline the importance of protecting participant confidentiality. In summary, summarizing interviews offers a more efficient, reader-friendly, and ethically sound approach to sharing qualitative research findings.

2.7 Demonstration

For the demonstration activity the goal is to demonstrate the effectiveness of the solution. To demonstrate the solution this research conducts a multiple-case study on existing cases from AMG. AMG has an extensive base of previous projects executed within the last years. Every project, and it's intellectual property, is saved and uploaded into a cloud application to which everyone in the company has access to. From this base around 5 case studies will be done to demonstrate the OFRAM and the value it can deliver.

2.7.1 Multiple-case study

The idea is to do a multiple-case study scoring cases on a set of measurable organizational characteristics together with a consultant from AMG. The researcher will present the list of characteristics and their maturity levels to the participant on which they will rank the organization based on their knowledge and experience with this organization. The cases will contain organizational characteristics ranging from strategy, digitalization, adaptability to culture. The consultants have worked within and together with these organizations in their projects and therefore have the required knowledge and experience to position these organizations. The ranked characteristics will be used as input for the OFRAM to be able to validate the OFRAM and its purpose. The results of analyzing the cases can lead to insights into which characteristics are conceptually sound and measurable and which might need some adjustments to become easier to measure.
To identify cases that can be used for this research some criteria have been set in place:

- A consultant that worked on the case still has to be employed at AMG.
- The case needs to be a project that started within the last year to ensure the ability to score an organization accurately.
- The consultant must have been active on this project for the whole duration.
- The case must be an organization that has started or is starting their digital transformation journey. This ensures that the researched case has the characteristics that will be scored during the case study.
- The cases need to be from different sectors, even though this cannot be mentioned to ensure the confidentiality.

2.8 Evaluation

The evaluation of the research will be done in multiple ways, first of all will the characteristics and the model be evaluated by the case studies. Siau and Rossi 2011 state that while executing case studies the risk of subjectivity in the research increases. So to mitigate that, the case studies will be done together with the consultant that

worked on this case. By executing the case studies in collaboration with the consultants. In the scenario that the evaluation indicates that major changes need to be made in the current design, the design cycle will be repeated. However for minor changes, these will just be made and discussed without additional evaluations.

2.9 Communication

This activity is focused on the way the problem and its proposed solution is communicated to the readers. For scholarly research publications the normal way is to follow the design cycle in your research and chapters (Peffers et al. 2007). This thesis will therefore follow the design cycle layout. Another aim of this research is to have it published in the thesis database of Utrecht University to reach other researchers interested in this field.

2.10 Validation

To prove that this research is executed well and reliable, this section will discuss the validity of the research. Research validity refers to the extent to which a study measures what it is intended to measure, and the extent to which the results of the study can be generalized to other populations and settings. There are several types of validity that are important in research, which can be seen in Table 2.

Table 2: Threats to validity

Threats to validity	Definition
Conclusion validity	This concerns the degree to which the reached conclusions are supported by the data collected during the research.
Reliability	This aspect is concerned with repeatability of the research, can others conduct the same research and come to the same results.
Internal validity	This aspect relates to whether a cause-and-effect relationship that was found in the research cannot be caused by other factors, thus creating causality.
Construct validity	This aspect deals with how the research is designed and if the correct methods are measuring what they are supposed to.
External validity	The concern of this aspect is if the findings of the study can be generalized.

[1]Table altered from: Ampatzoglou et al. 2019

To mitigate these threats this research underwent the following actions, based on Ampatzoglou et al. 2019:

- To mitigate conclusion validity, firstly the researchers' bias will be mitigated by addressing all the possible interpretations of the data and results as well as assumptions and the rational behind decisions that were made during this research.

- Concerning publication bias within the conclusion validity, the use of snowballing grey literature is implemented. As well as the expert opinions that can be used to mitigate this threat. Since this research is an exploratory research and aims to define future-ready organizations, all results will contribute to the research by identifying what such organizations are. All the findings from the methods are published in this research.

- In regard to the reliability, this is mitigated by clearly explaining all steps that were taken in this research, like the search queries and methods used. As well as using well-defined guidelines from scientific literature.

- For the internal validity, the participants will be informed generally what the interviews will be about but the goal of the interview is held confidentially to mitigate the threat of social desirability, which is when participants feel pressured or directed to give certain answers or act in a certain way. To mitigate the threat of unwanted cause-effect relations the participants for the interviews and case studies are carefully selected based on experience and knowledge in this field.

- In order to mitigate construct validity, there are three things that need to be taken care of: Subject bias, wrong measurement tools and experimenter expectancy's. The subject bias is related to the possible bias of the participants of this research. It will be mitigated by partly masking the true purpose of the study to the participants, so that they will be less likely to give biased answers.
  Experimenter expectancy is a possible bias of the researcher, which expects certain outcomes of the experiments. In order to mitigate this threat, the research will involve participants who will not know the hypothesis of the study. This gives them a less strong opinion about the topic and are unlikely to bias

the results.
Wrong measurement tools means that this research does not accurately measure what is intended. To mitigate, research is done into criteria of other measurement methods to support the development of the model. The model is also evaluated by experts to make sure it measures what it needs to measure.

- The external validity threats will be mitigated by doing the multiple-case study to figure out if the end result is applicable to multiple scenarios. The case study mitigates this because the solution of this research will be applied in multiple different cases, with each case having a different background and transformation objective. The different cases ensure the generalizability of this research.

3 Related Literature

This chapter presents the available literature which relates to future-ready organizations and their characteristics. The chapter starts by presenting an overview of definitions for future-ready organizations, to characteristics that categorize them and ends with an overview of other measurement methods. This chapter will provide the conceptual answer to SQ1, SQ2, SQ4 & SQ5. The answers provided by this section will be validated in section 4.

3.1 Future-ready organizations

3.1.1 Defining a future-ready organization

In order to assess future-ready organizations, the term itself needs to be concise and uniform. Since this topic is new and there are many different takes on the meaning of future-ready, the creation of a new uniform definition of future-ready organizations is required. However firstly an overview of the existing definitions is needed. This subsection will provide a partial answer to SQ1, by creating the definition for a future-ready organization.

The first definition is from Weill and Woerner 2018, they say that future-ready organizations are innovative, focused on satisfying the customer while also limit

the organizations costs and are one of the highest performing organizations in the digital economy. These organizations have satisfying a customers' need as a goal in combination with a great customer experience. The organizations' capabilities when it comes to the operational side are modular and agile, using data as an asset that is commonly shared throughout the company. As an extension on this definition, Woerner, Weill, and Sebastian 2022 say that these organizations use digital tools extensively and early in their operations to solve all sorts of challenges. Digital tools can be anything from platforms, agile methods to dashboards.

Another definition comes from Taylor 2022 is more focused on the continuity aspect. They state that to be a future-ready organization it is mainly about being ready to innovate and adapt at any given moment. The organization can thrive no matter the dynamics's of the environment. They believe that being future-ready, no matter what the future holds is the key in an organizations' survival.

Deloitte presents a different view which is focused on the disruption of uncertainty about the future. They find that future-ready organizations are have to have developed resilience on all aspects to withstand every kind of disruption. By looking not just to the immediate future but far behind it as well, they sense internal and external upcoming trends on which they can build future scenarios. With these scenarios they can change their strategy and operations by innovating accordingly. They do not wait out the disruption but transform their environment grasping on new possibilities and accepting presented challenges ((Deloitte 2023b, 2023a)).

De Smet, Gagnon, and Mygatt 2021 present their view on the future-ready organization as: an organization who knows what it is and what it stands for, focused on dynamic and easy operations. The organizations' ability to learn, innovate and pursue ideas is at the basis of their ability to scale in a dynamic environment. They present nine characteristics, presented in the next subsection, that will make these organizations stand out and thrive in the future.

When it comes to scaling an organizations abilities to be future-ready Yu et al. 2022 found that these organizations should stay up-to-date with its own know-how to stand out from the competition in the future. When the organizations' know-how stagnates, the competition grows which will make the organization fall behind and fail.

This subsection was aimed to find the answer to SQ2, *What is a future-ready organization?*. After the definitions above were analyzed and the steps towards a good

conceptual definition are followed (see section 2.6.1), the SQ can be answered. So, *A future-ready organization is an entity that is capable of adapting flexibly to a constantly changing business environment while maintaining its ability to innovate and deliver value to its stakeholders. It is well prepared for upcoming challenges and proactive in its approach to adapt, by continuously learning and innovating to remain ahead of the competition. All while still remaining true to its nature, purpose and organizational values.*

3.1.2 Characteristics frequently found in future-ready organizations

Now that the definition of a future-ready organizations is constructed, the key characteristics that such an organization should have according to the literature are researched. Table 3 introduces characteristics which could be for future-ready organizations. The aim of this section is to better understand parts of these organizations and help to understand the answer to SQ1. The results from this section will serve as input for the multiple-case study which is answering SQ3.

Table 3: Future-ready characteristics

Characteristics	Reasoning	Source
Adaptability	The organization is able to transform (a part of) the organization as a reaction to changes in their ecosystem.	(Sarta, Durand, and Vergne 2021; Weick and Sutcliffe 2011; Verheyen 2019)
Operational backbone	The organization has an efficient and exploitable operational backbone which enables room and resources for innovation.	(Ross, Beath, and Mocker 2019; Sia, Weill, and Zhang 2021)

Innovation	The organization has a culture of innovation, constantly exploring new ideas and technologies to create something new.	(Jiménez-Jiménez and Sanz-Valle 2011; Weill and Woerner 2018; Christensen, Raynor, and McDonald 2015)
Continuous learning	The organization encourages a culture of continuous learning and development to help its employees stay up-to-date with emerging trends and best practices within the field of work.	(De Smet, Gagnon, and Mygatt 2021; Blank 2013)
Digitalization	The organization is proficient in leveraging digital tools and technologies to improve operations, customer experience and enable growth.	(Westerman, Bonnet, and McAfee 2014)
Data	The organization needs data to make informed decisions regarding their operations.For this they need to have a strong data infrastructure and analytical capabilities to collect, process, analyze, and visualize data in a meaningful way.	(McAfee and Brynjolfsson 2012)
Technology	The organization is using technology to support their business, integrating their technologies to create value.	Nanda et al. 2021
Agility	The organization is flexible and agile, able to pivot and make strategic decisions quickly.	(De Smet, Gagnon, and Mygatt 2021; Taylor 2022)
Ecosystem-centrality	The organization is not just focused on meeting and exceeding the expectations of their customers but also other stakeholders in their ecosystem.	(Sia, Weill, and Zhang 2021; De Smet, Gagnon, and Mygatt 2021)

Talent management	The organization has a skilled workforce, that is able to collaborate effectively across functions and possess skill sets in line with the emerging trends in the industry.	(Deloitte 2023b; Guthridge, Komm, and Lawson 2008; De Smet, Gagnon, and Mygatt 2021)
Risk-management	The organization is willing to take calculated risks in the pursuit of innovation and growth.	(Deloitte 2023b)
Brand	Protecting and advancing your reputation and brand by developing a sense of purpose, and a value proposition, that motivates your employees, guides your business forward, and fulfills a social responsibility.	(Deloitte 2023b; De Smet, Gagnon, and Mygatt 2021)
Collaboration	The organization is effective at collaboration and developing partnerships that foster innovation and growth.	(Grenny et al. 2022; Huxham and Vangen 2013)
Digital strategy	Business and IT strategies are closely tied, with IT being the driver for business innovation.	(Sia, Weill, and Zhang 2021)

3.2 Taxonomy of digital measurement methods

To determine whether an organization has reached their desired level of capabilities, many measurement methods have been developed. Most methods consist of a model where an organization is ranked across various characteristics. This section's goal is to provide an overview of the existing methods that measure an organization's capabilities that helps answer SQ2.

3.2.1 Maturity Models

The most commonly used type of measurement model is the (Digital) Maturity model. This model is able to position organizations based on their maturity of

certain dimensions. So a maturity model consists of maturities, or stages, and dimensions, or characteristics and it is mostly depicted as a from left to right going upwards line. This section will discuss the design of maturity models to answer SQ5. Perera et al. 2023 researched 22 different digital maturity models and found that in 9 out of the 22 cases the maturity model incorporates 4 stages, 5 cases use 3 and respectively 5 stages, and in 3 of the cases 6 stages are used. These stages represent the level of maturity for dimension in the organization at hand. They also mapped the maturity stages and their descriptions and characteristics in table 1 of their paper, see Appendix A. The table summarizes the digital maturities per model into three stages; the early stage characteristics, transitioning stage characteristics and mature stage characteristics. By analyzing this table in three different parts some general maturity characteristics can be found and used later on in the development of the OFRAM. Tables 4, 5 & 6 provide the main highlights per maturity level. These tables provide an indication into what a characteristic should entail for which stage of the digital maturity process. The table will serve as input for the OFRAM's maturity levels. The left side represents a characteristic from table 3 while the right side provides a description for this characteristic that is categorizing for the maturity level. Not all characteristics could be represented based of the information in the article unfortunately.

Table 4: Early stage level

Characteristic	Description
Technology	Technology only supports a few processes(which are not digitized) and a low understanding of how technology can transform the business
Data	No plan or idea on how to use data
Adaptive capabilities	no usage of the organizational capabilities
Innovation	No steps taken towards transformation, the need for innovation is missing
Continuous learning	No motivation to develop (digital) skills
Talent management	There are no incentives from the organization to develop (digital) skills
Collaboration	Information is not shared efficiently

Digital strategy	The need for a digital strategy is not present, other plans for specific departments are not aligned

Table 5: Transitioning stage level

Characteristic	Maturity level
Technology	Technology supports most processes and starts to optimize some processes
Data	Data is used for analyzing the organization's processes
Adaptive capabilities	The capabilities are starting to get planned to accommodate the dynamic environment
Innovation	Some innovation initiatives are implemented
Continuous learning	Low motivation to develop their (digital) skills
Talent management	A few incentives from the organization are in place to develop the workforce's (digital) skills
Collaboration	Some formats start to form to enable collaboration
Digital strategy	All Strategies are aligned with the business

Table 6: Mature stage level

Characteristic	Maturity level
Technology	Technology is intertwined and fully integrated in the business processes and is the starting point of innovation
Data	Data is not only used to analyze the business but also to predict future trends or challenges
Adaptive capabilities	The organization has capabilities reserved for adapting
Innovation	Innovation is a core process of the organization
Continuous learning	The employees are eager to learn new skills and techniques
Talent management	There are many incentives from the organization to develop the (digital) skills of the workforce

Collaboration	Collaboration across departments in the form of multi-disciplinary teams
Digital strategy	Digital strategy is in place and digital is a core part of the other organizational strategies

Across these maturity stages certain dimensions, or characteristics, are measured. However the measured dimensions can differentiate per maturity model.
Therefore, Bumann and Peter 2019 researched into digital transformation models and frameworks and constructed a comparative analysis of 18 different models and frameworks with the dimensions that are used in the respective method. The four most used dimensions, are culture (13 out of 18), technology (12 out of 18), strategy (11 out of 18) and organization (10 out of 18). On average there were 6 main dimensions covered per model. However many of these these models had sub-dimensions which were not in the scope of Bumann's research. The existence of sub-dimensions means that the primary dimensions can be hard to measure on their own. Adding onto this challenge is that there is a differentiation in the definition of the dimensions, which lead to the researchers having to either combine or create new dimensions. So every model has their own dimensions, as Anderson and Ellerby 2018 developed their model with 5 dimensions: *Strategy, Technology, Operations, Organization & culture, Customer*. While Forrester's digital maturity model 4.0 has 4 dimensions: *Culture, Technology, Organization, Insights* (Gill and VanBoskirk 2016). And Berghaus 2016 present a digital maturity model consisting of nine dimensions the customer experience, product innovation, strategy, the organisation, process digitisation, collaboration, information technology, culture and expertise, and transformation management.
The main takeaways of the maturity models are that most maturity models exist of 4 maturity levels and on average 6 dimensions, the 4 most used being: culture, technology, strategy and organization. The results of this subsection will be incorporated in the design and development of the OFRAM. The maturities of presented characteristics will serve as input for the maturities of the OFRAM's levels. The insights regarding the amount of dimensions and maturities will be used as an example on how to design a working maturity model, providing the answer to SQ5 on how to develop a maturity model.

3.2.2 Digital Capability Framework

The next method is the Digital Capability Framework. There are multiple versions within this category, but in general this framework helps organizations to assess their current digital capabilities across different areas such as strategy, culture, technology, and talent. This framework enables organizations to analyze their current situation and identify new business opportunities and transformations ((O'Hea 2011; Melhem and Jacobsen 2021). O'Hea 2011 presented the capability building blocks, which is a framework for digital capability. It consists of 5 categories, containing 10 capability building blocks, some examples of building blocks are; Business alignment, Digital vision, Digital processes and Customer journey & experience. These building blocks form 5 maturity levels, going from lowest to highest the maturities are:

First Level: The organization does not have a digital strategy, there are no resources in place, they do not use set targets or metrics and they do not understand the best practice.

Second Level: Limited resources are used to support a customer-facing digital presence and basic expertise is in place within the organization.

Third Level: The organization sees digital ICT as a business tool with specifically set targets and reporting.

Fourth Level: Processes within the organization are being digitally transformed and the organizations reaps the benefits and efficiency from the digitalization.

Fifth Level: Being digital is at the center of the organizations strategy, it adds value within the organization and the culture within supports the organization's digital transformation ideology.

Melhem and Jacobsen 2021 executed a global research on digital capabilities and studied multiple proposed frameworks. Key findings from this research are:

- There is no universal definition for digital capabilities.
- The frameworks measure the digital capabilities across the qualities of the whole system rather than as individual assets. Digital capabilities are used as a term for the level of efficiency by which organization can deliver results.

- Most frameworks consist of three cross-cutting themes on which digital capabilities are build: Leadership, Skills and Culture.
- The frameworks propose an action which the organization can take to transform in the digital ecosystem.

To summarize, the digital capability framework overview presented digital capabilities across different areas such as strategy, culture, technology, and talent. As well as the five levels on which an organization can be positioned, these five levels can be deduced to certain characteristics as, digital strategy, digitalization and adaptive capabilities. The levels can also be linked with the listed maturity levels from the previous section. Thus will this subsection be used as a reference and input for the creation of the OFRAM.

3.2.3 Digital Readiness Assessment

Another method that is commonly used is the Digital Readiness Assessment. Voß and Pawlowski 2019 defines readiness as: *An organization's state to be ready for changes and willingness to take action.* Nasution et al. 2018 defines digital readiness as willingness and tendency to adopt digital technologies and readiness to innovate by using these technologies in order to achieve the organizational goals more efficiently. This research also discovered the five key characteristics to measure digital readiness: *Personal innovativeness, attitudinal readiness, action readiness, emotional response and lastly predisposition.* Voß and Pawlowski 2019 researched the current state of the art for digital readiness frameworks, a key finding presented in this research is the representation of certain characteristics in the models. In the nine researched methods, dimensions as strategy, organization and management are included in almost all versions of this method, while culture and employees or people are the least incorporated dimensions as just half of the version use these dimensions.
This method will be used to help make the decision of which dimensions the OFRAM will measure. By introducing the most and least used characteristics a distinction can be made for the OFRAM to partially include both the underrepresented characteristics, since current models are not using them. And the most used dimensions, since they are apparently key for determining an organization's readiness.

3.2.4 Organizational Readiness

Continuing on the readiness of an organization, Lee, Vargo, and Seville 2013 created a model for Organizational Resilience. In this model organizational resilience consists of two factors; *planning and adaptive capacity*. These factors are measured by indicators, 5 indicators for planning and 8 for adaptive capacity. Indicators such as external resources, planning strategies and proactive posture are being measured for planning. While indicators such as internal resources, staff engagement, innovation and decision making are used to measure adaptive capacity. They also presented an extended list of statements for measuring the resilience of an organization, for this research a select number of statements could be used to influence the maturity levels in the OFRAM. The statements that Lee et al. made, such as listed below, can help define maturity levels for an organization's future readiness:

- The organization knows the amount of resources it needs to operate normally
- The organization can change quickly from business-as-usual mode to responding to crises in the ecosystem.
- The organization aims to be able to respond to the unexpected.
- The organization proactively monitors what is happening in its ecosystem to stay ahead of upcoming trends or crises.
- The organization is a learning organization, aiming to learn from past projects using these lessons for future projects.
- The organization is prepared to invest to ensure that decisions are made on accurate data.
- The organization invests sufficient resources in being ready to respond to an emergency of any kind.
- The organization has enough internal resources to operate successfully during business-as-usual.
- The organization manages resources such that they are always able to absorb a small amount of unexpected change.

- When a problem occurs in the organization, internal resources become more easily available at short notice and less legacy and hierarchy to deal with.
- People in the organization actively manage areas of their work that rely on other stakeholders in the organization's ecosystem.
- People are encouraged to move between different departments or try different roles within the organization to gain experience.
- There is an excellent sense of collaboration within the organization.
- People in the organization can work with whoever is needed to get the job done well, regardless of departmental or organizational boundaries.
- The organization actively encourages people to challenge and develop themselves through their work.
- People in the organization can use their knowledge in new ways.
- People in the organization are rewarded for innovative ideas.

Deloitte 2023a also researched into organizational resilience. They state that resilience is build throughout 3 stages: *change, design and adversity*. With resilience through change organizations are advised to create an ecosystem that enables flexibility to change while upholding their level of resilience through the transformation the organization undertakes. Resilience by design is the planning and execution of the path to organizational resilience by the organization. The last stage, resilience in adversity, is that an organization has the fitting governance, plans, roles and responsibilities to meet adversity and disruption when it happens. They also mention that a resilient organization is one that transforms with the ecosystem during a crisis and does not wait for it to end. By creating new attitudes, agility and structures into the core of the organization it is able to not just survive but drive the organization forward.
With the presented statements and definitions, organizational resilience will be used as input for defining the maturity levels for the OFRAM. The presented items in this paragraph will be combined with the results from the maturity models and combine them into the maturity levels for OFRAM.

3.2.5 Competing values framework

A prominent model which is used to map an organizations culture is the competing values framework from Quinn and Cameron 1999. They present a four quadrant model with organizational culture characteristics, see Figure 2. The characteristics in the model represent the competing priorities of an organization, and based on these characteristic they are able to determine the organizational culture based on these competing values. It is important to note that they mention that most organizations do not fit into one or the other quadrant, but that they operate within all four cultures while gravitating to one. On top of this they state that no culture is the best, or even a distinction between cultures, because it is dependent on the organizational and environmental characteristics.

Figure 2: Competing values framework

Source: Quinn and Cameron 1999

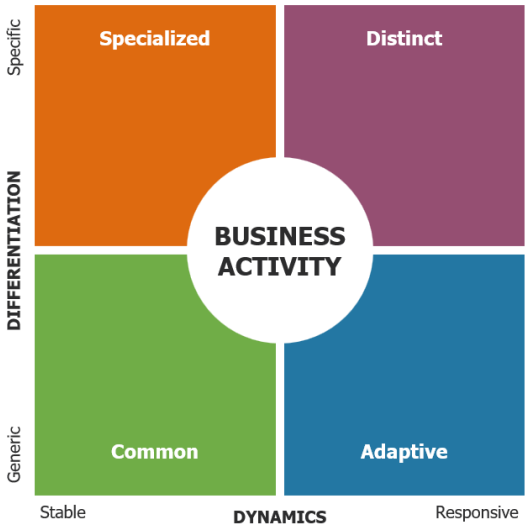
The competing values framework will be used to help define the maturity levels for the culture dimension of the OFRAM. This framework can help because many digital models do not incorporate this characteristic and when certain models do it is not unambiguous.

3.2.6 Business Activity Model

Overall, these methods and frameworks can help organizations to position themselves in preparation for or during the digital transformation process. However

mapping organizations as a whole into one maturity can be challenging since an organization consists of many different business activities that could vary on their individual maturity. Therefore, Nieuwmeijer and Sprokholt 2022 developed the Business Activity Model (BAM), this model can categorize business activities into 4 different modalities (see Figure 3). The model uses business activities as a starting point to link the business, organization and technology together. The common modality is for activities that are providing reliable results and services, aiming for the optimal price to performance ratio. The adaptive modality entails activities that are modified in response to changes in the organization's ecosystem. The specialized modality is for activities that distinguish themselves in specific and complex solutions, or by using specific knowledge and expertise. The distinct modality is reserved for activities that are included in the development of innovative services and products in response to dynamic demands from the organization's ecosystem.
A modality can function as a maturity in the sense that a modality can be of a higher level than another. However this is specific to the activity and not the organization as a whole. For some activities it can be better to stay on a low modality instead of aiming for the highest possible. This model works when an activity is placed into a certain modality based on a list of characteristics that categorizes the modality and the dimension of the activity. The dimensions that this model uses is different than the ones from the maturity models. An activity is positioned based on the differentiation, which entails the similarity of the activity compared to other organizations, and dynamics, which entails the ability for an activity to adapt to changes in its ecosystem. So if an activity is generic but responsive it is placed in the "adaptive" dimension.

Figure 3: Business Activity Model



Source: Nieuwmeijer and Sprokholt 2022

The list of characteristics is based on nine main themes, that are the same throughout the model. For these themes there are many defining characteristics that vary based on the modality. The 9 aspects, with relevant characteristics per modality for comparison to previously discussed models and dimensions, used in this model are:

1. Strategic contribution
   (a) Common modality: standardization
   (b) Adaptive modality: customer-driven & business development
   (c) Specialized modality: differentiating & specific capabilities
   (d) Distinct modality: innovation
2. Output/result
3. Process (how)
4. Governance
5. Leadership style
6. Culture
   (a) Common modality: task-oriented & productivity

   (b) Adaptive modality: result-oriented & business skills
   (c) Specialized modality: solution-oriented & team effort
   (d) Distinct modality: innovation-oriented, creativity & continuous skill development

7. Sourcing
8. Technology
   (a) Common modality: standard solutions & technology determines the business process
   (b) Adaptive modality: proven market solutions & technology determines the business process
   (c) Specialized modality: specific & robust solutions & business shapes technology
   (d) Distinct modality: specific market solutions & business shapes technology
9. Data
   (a) Common modality: internal usage & process optimization
   (b) Adaptive modality: external and internal usage & customer and market analytics
   (c) Specialized modality: external and internal usage & data integration and enrichment & advanced analytics
   (d) Distinct modality: external and internal usage & predictive models

The business activity model provides many characteristics that could be used for defining the dimensions and maturity levels. Although the characteristics from technology and data can be linked to previously found literature, the other characteristics are not supported by the found literature and are therefore not possible to link to the existing characteristic list. The characteristics from the strategic contribution do not resonate with the found characteristics and maturities of the other methods. Additionally, the cultural characteristics are only partially supported by the other literature. The only reoccurring aspect is the focus on the skills of the organization in 6b & 6d in the list above. As well as, collaboration only occurring in 6a & 6c.

So, only half of the modality characteristics can be linked to the previously found characteristics. Making it not possible to integrate the modalities as maturities for this research.
This section aimed to provide an overview of current methods that position organizations on their capabilities or readiness. Within this section, methods as maturity models, digital capability frameworks, organizational resilience frameworks, the competing values model and the business activity model have been analyzed. In conclusion is every method useful to this research, either as input for or as the foundation of the development of the OFRAM. While models like maturity models, organizational resilience and business activity model helped with both the dimensions as the maturity levels of the OFRAM. The other models contribute solely to define the dimensions more accurately.
In conclusion this chapter helps to answer SQ2, SQ4 and SQ5, by providing an overview of different methods with their key concepts SQ2 is answered per method. The answer to SQ4 is found in the analysis of the business activity model, the relation between future-readiness and modalities only exists partially. While SQ5 is answered by looking at all the methods and their design choices and being able to derive some general concepts as the amount of dimensions or maturities used that can be used in the design of the OFRAM.

4 Results

This chapter discusses the results that were gathered from the interviews and multiple-case study. The goal is to validate the answers to SQ1 and SQ2 by presenting the results of the literature study to experts within this field and gathering their remarks on it during a set of expert interviews. Next to validating SQ1 and SQ2, this chapter is focused on answering SQ3 and SQ6. Both of these questions will be answered by the multiple-case study, SQ3 will be answered by assigning weights to the characteristics during the multiple-case study. While SQ6 will be answered by the results of the whole multiple-case study. The chapter starts by addressing the interview results, followed by the development of the OFRAM and ends with the results from the case studies.

4.1 Interviews

This subsection will provide the results from the interviews that were held to evaluate and discuss the definition and characteristics of a future-ready organization. Table 7 shows the experts that participated, with their role and years of experience to ensure that they are indeed experts in this field. Firstly a quick summary of all the interviews will be given, followed by table 8 containing the main takeaways and points of improvement and from which interview(s) these resulted.

Table 7: Interview participants

Interview	Role	Years of experience
Interview 1	Medior management consultant	5 years of experience
Interview 2	Senior management consultant	15 years of experience
Interview 3	Senior management consultant	20 years of experience
Interview 4	Senior management consultant	30 years of experience
Interview 5	Senior management consultant	20 years of experience

4.1.1 Interview 1

The first interview was with a medior management consultant closing in on three years of experience within this field. To open the interview the definition for a future-ready organization was presented. After which the discussion about the topic started. The first remark was what the difference is between innovation and adaptation, since the participant viewed these as similar concepts. Which lead to a clear distinction between the two elements, innovating is for an organization to create or do something new while adaptation is a change to or of a part of the organization based on the changes in the ecosystem.

After this distinction was made the participant introduced the importance of willingness to change and being open for innovation. But at the same time balancing exploration with exploitation of the current operational backbone. To respond to changes in the ecosystem the participant finds that organizations must understand their customers on a deeper level, not just using simple survey data but go beyond this surface-level insights. The participant emphasizes on a multidisciplinary culture within the organization that needs to break down barriers and enable people to contribute and ask critical questions. The participant suggests creating hybrid roles that combine different expertise and perspectives, enhancing the value brought to

the organization. The importance of continuous learning, adaptability, and curiosity in a rapidly changing world are underlined by the participant as a key part of an organization's culture. After these remarks the participant reiterated that the definition was accurate and complete.
As a follow-up to the created definition within this research, the participant was asked to give their view on a future-ready organization. The participant listed the following characteristics within their definition:

- Being a digital leader in the industry
- Investments in technology
- Having a certain view on the future and being prepared for that
- Changing the perspective of digitizing humans to digitizing for humans
- Next to having multidisciplinary teams also becoming a multidisciplinary organization
- The willingness of the whole organization to learn and develop.
- Aligning the organization with digitalization trends through the business-IT alignment in the organization.
- Having strategies in place that foster innovation and being digital.

After establishing the general basis of future-readiness, the list of characteristics from Table 3 are presented and discussed. The first remark was again the need to redefine the difference between adaptability and innovation. Stating that the adaptability is everything regarding a response to a change in the ecosystem while innovation is initiating this change from within the organization.
The next item was that within continuous learning the emphasis on learning related skills needed to be more prominent, since if people like to learn new things that have nothing to do with the organization it could still be considered as continuous learning. The participant also proposed a way to measure an organization's culture, the proposed idea was that organizational culture is the average of the sum of all the behaviours within the organization. As an advice the participant said to look into models and literature that are not focused on the business side of organization

but actually on the cultural aspect.
When the topic of the brand of an organization came along the participant mentioned that it is important however that it is almost impossible to measure the impact of this on an organization and that it could form a topic for a different research.
Another point made by the participant was the importance of communication within the organization, and asked if this was taken into account within the collaboration characteristic or whether it should be a different characteristic. When confirmed it was included in the collaboration and given the idea behind it, the participant approved this characteristic.
The last point of improvement from this interview was the naming of the risk-taking characteristic, since the participant found it difficult at first to evaluate this because it was closely related to innovating. However after explaining the idea behind risk-taking, that it is focused more on the strategy side of innovating and not the innovation itself, it became clear that it should be a different characteristic. But as advice the participant said to look into the naming of this characteristic to avoid future misinterpretations.
For the last remaining characteristics,talent management, customer-centrality, agility and digitalization, the participant shared his enthusiasm and approval with no points of improvement. And thus concluding the interview.

4.1.2 Interview 2

This interview was held with a senior management consultant with over 15 years of consulting experience, with the last 5 specializing in organizational structures and helping them adapt to technology and data-driven environments. After being presented with the created definition the participant expressed enthusiasm and approval. According to their perception of a future-ready organization only one aspect was not mentioned, the importance of a stable and exploitable backbone for an organization that can enable acceleration. The participant also suggests changing the term "dynamic" to "flexible" within the definition, since they see the business environment as flexible. After discussing the definition of dynamic, which relates to the abilities of an organization to adapt, versus flexible, which relates to the ease of adapting. The definition is adjusted by changing "dynamically adapting" to "adapting flexibly". They also emphasized the importance of sticking to the orga-

nizational values and culture while pursuing innovation and transformation. After a short discussion about how difficult it can be to measure an organization's culture, the participant mentioned its increasing significance in today's business world. Therefore, taking this characteristic into account for the future-readiness of an organization is important according to the participant. When asked to give their version of the definition the participant mentioned there was nothing more to add to the presented one except the organizational backbone.

After the definition, it was time to gain qualitative insights into the characteristics of such an organization. The main takeaways for the characteristics will be discussed per characteristic. As mentioned before, it started with the importance of a stable and exploitable operational backbone. As, according to the participant, balancing stability and adaptability is essential for the long-term success of an organization. After which innovation was seen by the participant as an evident characteristic where not much could be misinterpreted. When presented with the similarity between innovation and adaptability in the current state they shared the view of making both definitions more explicit to avoid possible misunderstandings.

The participant introduces the idea that the current system may continue to exist for a long time, but there is a concern that if organizations do not innovate, they may fall behind as the volume of work increases. The suggestion was than made to the participant if sustainability could be important and if that raises questions about how long the existing system will be viable. Their response was that it will be of importance but it is very hard to measure within an organization what the effect of the digital footprint has on the organization.

The next topic of discussion was the organizational culture, the participant agreed with the current definition of continuous learning and emphasizes the importance this has in the long run for enhancing adaptability and developing your employees. The conversation then touched upon the significance of talent management and ensuring a skilled workforce. According to the participant talent management should include providing training and opportunities for employees to develop their skills, as well as promoting collaboration and teamwork within the organization.

A part of the organizational culture is also the customer approach, according to the participant. They underscore the importance of adopting the outside-in perspective by focusing on understanding the customer's needs and deliver value to and for them. The participant stated that this characteristic should focus on the customer journey and customer experience.

To the question if taking risks is important for the longevity of an organization the participant said that: "while not every organization needs to be a pioneer, a willingness to innovate and adapt is crucial for staying competitive in the market". They also agreed that risk-taking could take on a better descriptive name like risk-management.
When introduced to the topics of digitalization and brand, the participant was on the same line as the presented characteristic and acknowledged the importance of both characteristics. The last point of advice given in this interview was for digitalization to take into account how data was used within the organization since it can add value in many different ways.

4.1.3 Interview 3

The participant in interview 3 is a senior management consultant who has over 20 years of experience in various roles related to consultancy, project management, and data-related work. The participant found the presented definition complete and fitting for this research. When prompted to give their definition they mention that the presented definition entails all parts that they expect of a future-ready organization. After the common ground was found the characteristics were presented to the participant. Immediately the participant brought up that adaptability and innovation go hand in hand, with innovation being a means to drive change and stay ahead in the market and adaptability being a response to changes in the market driven by others. After which the researcher asked if it is a good option to let innovation fall under adaptability as a sub-dimension in the model, to which the participant agreed. They also underlined the risk-management part of innovation and that it is an important value for organizations that focus on longevity.
The researcher introduced the growing importance of putting the customer at the center of business strategies in a customer-centric approach. The participant shared his insights about considering the broader ecosystem rather than focusing solely on customers, because building long-term relations is important not just for customers but also the suppliers and other actors the organization deals with.
That introduced the collaboration aspect into the interview, on which the focus lays on collaboration within the organization. The most important parts of in-house collaboration is according to the participant the collaboration in and between multidisciplinary teams. And that effective collaboration involves active communi-

cation, shared decision-making, and working together towards common goals.
Data, technology, and digitalization are considered implicit aspects of future readiness but may require a separate research focus due to their complexity. The participant emphasizes the importance of data-driven decision-making and the ability to measure data within an organization. After which they shared their experience in how to position an organization's skills with data by suggesting three ways to measure it:

1. Does the organization possesses the right data?
2. Does the organization use their data the right way?
3. Is the organization's data accurate?

By answering these question the participant is confident that it is possible to position an organization's future-readiness. However the participant also mentions the potential ethical considerations that arise in the context of data-driven decision-making, particularly in industries like healthcare. They highlight the need for a balance between human expertise and data-driven approaches. This subject has not come forward from the literature review but it is clear how it can relate to building a company's reputation and brand. The reputation and brand of an organization on the other hand can influence the long-term sustainability of the organization according to the participant. But again the way to measure this or position an organization on this characteristic is challenging.

4.1.4 Interview 4

For this interview the participant was a senior management consultant with 30 years of experience in IT, banking, and retail. According to the participant the definition entailed all the elements which a future-ready organization should have. Immediately dialing in on the first two characteristics, adaptability and agility. The participant emphasized the importance of these characteristics, highlighting that they must be accompanied by a clear strategic direction. Without a solid plan guiding adaptation efforts, businesses risk keep to exist with the dynamic markets and customer demands.
Then they explained that the degree of innovation within an organization is intricately linked to its agility. Embracing new ideas and approaches allows businesses

to stay ahead of the curve and respond effectively to emerging trends. This could be enhanced by another key theme from this interview, the significance of learning organizations and their employees. The participant passionately stated that the employees form the foundation for success in any industry. And emphasized the importance of nurturing and developing talent, noting that talent management should primarily focus on the employer's perspective, encouraging employees to reach their full potential. However not everybody possesses the agile thinking that is necessary for adaptability. They expressed the need for businesses to identify and nurture employees with a different spirit, individuals who thrive in dynamic and fast-paced environments.

The interview then shifted towards leadership and collaboration. The participant highlighted the importance of leaders adapting to new requirements and fostering a culture that promotes agility and collaboration. They drew inspiration from a movement in Germany, where companies actively assisted their suppliers to improve, fostering a sense of partnership and mutual growth. Again introducing the ecosystem-centrality aspect and not just customer-centrality. With the latter being more important now than ever before, according to the participant. They stressed that businesses must prioritize understanding and meeting customer requirements while ensuring timely product delivery. Failing to focus on the customer can result in missed opportunities and losing ground to competitors.

When discussing branding, the participant stressed its significance in today's business landscape. They observed that newer brands often exhibit more innovation, because startups have an opportunity to build their reputation from scratch. With a well-crafted product plan and a dedication to excellence, these businesses can establish a strong reputation and brand identity.

With innovation, risk management also emerges as a critical factor. The participant emphasized that companies must be aware of the level of risk they are willing to take. While greater risks can lead to better revenue and market gains, finding the right balance is crucial for long-term success.

Lastly, we discussed the impact of digitalization across different areas of a company. The participant highlighted the need to measure the degree of technological integration, examining how much of the business processes are supported or handled by technology compared to manual labor. This measurement provides valuable insights into the company's digitalization progress and areas for improvement.

4.1.5 Interview 5

In this interview, with a senior management consultant who specializes in business strategies, the topic of essential characteristics and strategies required for thriving in today's and the future's dynamic organizational environment was discussed. Their expertise in guiding organizations towards future readiness provided valuable insights into the essential qualities and strategies required for thriving in an ever-changing business landscape.

Being presented with the created definition, the participant's feedback is to remove the repetition in the definition and focus on the ability to adapt to a changing environment and deliver value to stakeholders. They followed it up by providing their definition: "A future-ready organization is one that demonstrates the ability to dynamically adapt to a constantly evolving business environment while delivering value to stakeholders. In essence, it is an entity that embraces change, striking a balance between stability and innovation, and proactively responds to emerging challenges." After which they elaborated on the evolving environment being not just the market or customer but a whole ecosystem. The participant emphasized the importance of understanding these dependencies in the organizational ecosystem in order to thrive as an organization.

The key characteristic of a future-ready organization, as highlighted by the participant, is its adaptability to changes in the market and industry. Rather than solely focusing on being the first to innovate, organizations should prioritize their capacity to respond and change effectively, meeting the evolving needs of both their end customers and the broader industry. While innovation remains vital, being future-ready is about preparedness rather than necessarily being the primary innovator according to the participant.

The participant emphasized that being future-ready requires a deep understanding of the market and industry dynamics. Organizations should constantly monitor and anticipate shifts in customer needs and broader industry changes. By considering the evolving needs of end customers and aligning their strategies accordingly, companies can navigate the dynamic market and industry landscape more effectively.

The topic of organizational culture then came to light, with the participant acknowledging the significance of developing your people and motivating them to become better. The participant mentions that they think the motivating and encouraging of your people is of a higher importance than the incentive coming from the bottom-

up. By motivating and encouraging them to keep developing themselves and keep learning, the organization can improve incrementally and could make very big steps with a rightly skilled workforce. A good company culture is on top of this also important for employees to feel comfortable and motivated to come to work.
The culture and leadership style should align with the activities and goals of the organization. However the participant highlights the inconsistency that comes with this, since different cultures might be necessary in different cases. In some cases, a hierarchical culture may be necessary, while in others, a more collaborative and multidisciplinary approach is beneficial. But in general, collaboration within and between departments is crucial for effective teamwork and problem-solving in the organization. The last touched topic in the interview is digitalization, which is essential for expanding operations, improving customer experience, and leveraging opportunities within the company. However the last remark of this interview was, that it's important to note that not all organizations need to fully embrace digitalization to be future-proof. Sometimes stability and quality can still be valued as a top quality even in non-digital businesses.

4.1.6 Overview of interview results

Table 8 presents the main takeaways from the interviews, in no particular order, and which actions have been taken to improve this research based on these points.

Table 8: Overview of interview results

Source	Main takeaways	Taken actions
Interview 3, 4 & 5	Not just customer-centrality but ecosystem-centrality	Scientifically supported this to adjust it in table 3
Interview 1, 2 & 3	Clearer distinction between adaptability and innovation	Refined the definitions of "Innovation" and "Adaptability" in table 3
Interview 1	The definition of adaptability should not emphasize the speed of adapting	Removed "quickly" from the definition of adaptability

Interview 1, 3 & 4	Brand is almost impossible to measure within this type of research	Even though it still is of importance for the longevity of an organization, it is too complex to take into account for this research
Interview 1 & 2	The importance of a stable and exploitable backbone for an organization	Added a new characteristic called "Operational backbone" to table 3 supported by literature
Interview 4 & 5	The importance of good digital strategy alignment to support digital transformations	Added "Digital strategy" as a new characteristic to table 3 and supported with literature
Interview 1, 2 & 4	Risk-management would fit better than risk-taking	Changed the name of the characteristic to "Risk-management"
Interview 2 & 3	How to measure the impact of data	Laid the foundation for thee maturity levels of the data characteristic
Interview 1 & 2	The continuous learning aspect has to deal with learning work-related skills	Adjusted the definition, so it includes this specification

4.2 Model development

This section is focused on the development of the OFRAM, therefore answering SQ5. By looking at the results of SQ1 and SQ2, the knowledge is available to construct the OFRAM and it is time to start constructing it. This section will provide the design choices made during this process.
Based on the interview results, the characteristics and definition of a future-ready organization are perfected. Combined with the overview of the current measurement models that was presented in section 3.2, it leads to the start of the creation of the organizational future-readiness assessment model.

4.2.1 Dimensions of the OFRAM

Firstly, the model's dimensions and measurable characteristics need to be defined. Since most maturity model exist are built on 4 maturity levels, this model will consist of 4 main dimensions as well.

The variation in dimensions is high however as Bumann and Peter 2019 mentioned, the most prominent dimensions are: culture, technology, strategy and organization. These methods however assume that an organization always has the capabilities to adapt to the upcoming changes, which does not have to be the case. There are also differences in the capabilities that an organization has, therefore is it also important to look at the adaptability of an organization.
Therefore this will be the first dimension of the OFRAM. The next dimensions will be the top 3 of the most occurring and important dimensions according to the literature and confirmed by the interviews. The following list presents the main dimensions with their underlying measurable characteristics:

1. *Adaptability*
   The interviews and literature were on the same page regarding adaptability as a characteristic. However, within the literature it is not seen as a main dimension. While the experts specifically liked the idea of making this a main dimension and measuring it by using other characteristics. Therefore, based on the interviews, adaptability has become the first dimension of the OFRAM.

   (a) Adaptive capability: The interviews made clear that there needed to be a distinction between adaptability and innovation. From the literature came the new focus, namely on the aspect of the resources of an organization to adapt to changes in the market. Adaptive capability is related to the resource part of changing.

   (b) Operational backbone - This sub-dimension was firstly not introduced by the literature, but after 2 interviews mentioned the importance of this characteristic, additional research was needed. After reading about the characteristic in the literature, the characteristic was indeed seemed necessary for a future-ready organization.

   (c) Innovation - As innovation is a key aspect towards future-readiness, according to both the literature and interviews, this characteristic could not be missing from the list.

   (d) Agility- Both the interviews and literature made clear that the speed of change is also important towards becoming more future-ready. However, it is focused more on being more future-ready than other organizations, since speed is relative to environmental variables.

2. *Digitalization*: The dimension of digitalization was a clear choice based on the literary results and expert opinions. Both agree that without digitalization an organization cannot be future-ready. Therefore, is digitalization the second dimension in the OFRAM.

    (a) Data - To use data as a measurable characteristic was a clear decision based on the literature. However, the literature did not provide a good picture on how to measure an organization's data usage across multiple levels. Luckily, the interviews provided this picture which lead to the inclusion of this sub-dimension.

    (b) Technology - The term technology was inseparable with innovation and future-readiness. Although the literature did have multiple perspectives on how it could be included. The interviews made clear that technology should be looked at as a supporting characteristic for the business processes.

3. *Culture*: Where in the literature the opinions of using culture to position organizations was divided, however existing in most methods, the interviews gave a clear one-sided result. Culture is growing importance as an organizational characteristic, and should definitely be included for some part in this model. Therefore, culture becomes the third dimension in the OFRAM.

    (a) Continuous learning - Both the literature and experts were in agreement when it came to the importance of the learning culture in the workforce for a future-ready organization. The more motivated the workforce is to learn, adapt and innovate, the higher the likelihood of a long existence for the organization.

    (b) Talent management - Next to the motivation of the workforce, the encouragement and incentives from the organization to the workforce is also of importance for the longevity of an organization. Thus, making it important to include in a model that wants to assess if an organization can still exist in the future. Both the interviews and the literature indicated that this is indeed the case.

    (c) Collaboration - Even though both the literature as the interviews included collaboration in their respective description of a future-ready organization and its characteristics, the interviews were more clarifying towards

using this characteristic as the literature was. Emphasizing on the importance of multidisciplinary teams and how to measure collaboration, the interviews were the deciding factor to be able to include this characteristic.

4. *Strategy*: Based on both the results from the literature as well as the interviews, strategy is seen as one of the main dimensions for organizations for a good reason. Organizations should have a clear vision on what to do or become and how to get there. Strategies are the crucial part in this process and is therefore named as the last dimension for the OFRAM.

   (a) Risk-management - The literature introduced the significance of taking risks for an organization's long-term existence. The experts agreed with this up to the point that the risks have to be calculated risks and not just a shot in the dark. To help and make this distinction clearer, the name was changed to risk-management as described above in table 8.

   (b) Digital strategy - The literature paved the way into the importance of having a digital strategy for organizations that want to be ready for upcoming challenges and trends. However the interviews made clear that without having such strategies aligned the organization will not be aligned. Since these strategies influences many other aspects of an organization such as the digitalization, and adaptability and innovation. And digital should be a core value within the whole organization.

This model does not incorporate brand and ecosystem-centrality, since brand is not related to anything inside the organization itself but more on the outside-in perspective and for ecosystem-centrality no good measurements could be identified to support this characteristic.

4.2.2 Maturity levels of the OFRAM

With the dimensions defined, it is time to define the maturity levels of the OFRAM. This is done based on the results from the literature and interviews.
As Perera et al. 2023 mentioned that most models that use maturity in some form use 4 levels. This model will consist of four maturity levels as well. The foundation for these levels is from the overview of the models on their maturities, described in

section 3.2 and the results from the interview. The maturities of adaptive capabilities, agility, innovation, continuous learning and talent management are based on the literary findings, looking at the stages from other maturity models to analyzing the requirements or statements that are used to position an organization, in models such as the organizational resilience and competing values framework.
For the characteristics, risk-management and the operational backbone, the importance of the characteristics were emphasized in the interviews. Pairing these statements with an example that functions as the highest level of future-readiness the experts helped form the maturities for these characteristics. Based on these statements the maturity levels of these characteristics were defined. Additionally, these maturity levels were substantiated by new findings from the literature review based on the points of improvement from the interviews.
This leaves the maturities of the data, technology, collaboration and digital strategy characteristics. The maturities of these characteristics are formed by using the literary results and complete them with the results from the interviews. By using the literature as a starting point the overall goals of the maturities were clear but the interpretation of the maturity levels left some room for inconsistencies. The participants of the interviews helped by defining the maturities by giving their insights on what the ideal scenario would be for these characteristic, so maturity level 4. From level four the previous levels would be defined by taking the complete opposite of the ideal situation. For example, for the data characteristic the literature provided the insights for the ideal beginning - and end state. However the levels in between were inconsistent throughout the literature and the interviews provided the insights needed to pad the second and third maturity level and create consistency for this characteristic.
The maturity level assessment list for the OFRAM is constructed in such a format that it easily can be applied for different cases. The finalized list is presented in figure 5.
With both the dimensions and the maturities defined the development of the model is finalized. Which starts the design phase of the OFRAM, the design is inspired by the digital maturity stages model from Perera et al. 2023. As these models include 4 aspects on different levels. However these models use the points as the maturity levels and the inner diamonds as percentage of their respondents fitting in these levels. For the OFRAM, the outer points of the model are the dimensions and the inner diamonds are the maturity levels, going from the lowest as the most inner

diamond to the highest as the most outer diamond. The conceptual organizational future-readiness assessment model is depicted in Figure 4 and will be validated by the multiple-case study in the next section.

Figure 4: Organizational Future-Readiness Assessment Model

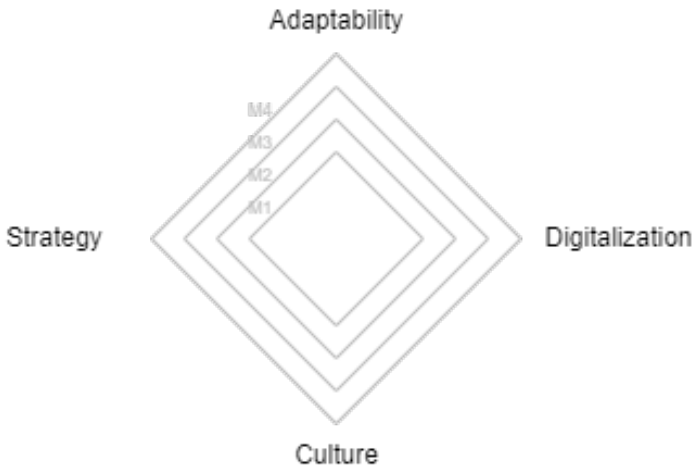


Figure 5: Future-ready maturity assessment list

		M1	M2	M3	M4
Adaptability					
	Adaptive capability	No capacity available to adapt the organization	Limited resources available for adapting the organizatoin	Resources for adapting the organization are available	Resources are reserved for adapting the organization
	Operational backbone	Operational backbone is not fully developed yet	Operational backbone functions well but are not fully efficient	Strong operational backbone that is efficient	Operational backbone can be exploited and relied on to run the core
	Innovation	No incentives towards innovation throughout the organization	Some innovation initiatives are implemented	Organization is looking to innovate on multiple levels	Innovation is a core process within the organization
	Agility	Transforming (parts of) the organization is slow	Transforming (parts of) the organization is moderately slow	Transforming (parts of) the organization is moderately fast	Transforming (parts of) the organization is fast and efficient
Digitalization					
	Data	No idea or plan on how to use data	Starting to use data to understand the organizationand ecosystem	Data is used to analyze and support business processes	Data is used for predicting future trends and opportunities
	Technology	Technology only supports a few business processes	Technology supports most of the business processes	Optimising business processes via new technologies	Integrated technology into the business processes.
Culture					
	Continuous learning	No intrinsic motivation to develop skills upto industry standards	Low motivation to develop their skills upto industry standards	High motivation to keep developing their skills upto industry standards	Eager to learn and develop personal skills above industry standards
	Talent management	No incentives in place towards developing their workforce	A few incentives are in place to develop the workforce, but not encouraged	A few incentives are in place and encouraged to develop the workforce	Many incentives throughout the organization to develop the workforce are in place and used
	Collaboration	Departments and people are not collaborating	Starting collaboration by creating some formats that enhance it	Intergroup coordination, integrated teams	Multi-disciplinary teams that collaborate throughout the organizationon all levels
Strategy					
	Risk management	Risk averse throughout the org, last in the pack to change	Still risk averse, but changes along with the majority	Becoming more of a risk seeker, not afraid anymore	Excited to try new incentives and confident to take on risks
	Digital strategy	No digital strategy in place, just focused on business	More strategies in place to align the business	Organizational strategies are aligned to support business	Digital strategy is in place and digital is a core part of all other strategies as well

4.3 Multiple case-study

This section presents the multiple-case study that is executed to validate the model and the measurable characteristics, thus answering SQ6. Each case will be analyzed individually based on the scores and comments from the participant of the case-study. The case starts by presenting the OFRAM and the possible value it could deliver to the participants. Followed by the next phase where the participant is asked to plot the case at hand according to the defined list in figure 5.
At the end of each case, the participant was asked if their were some characteristics that they could identify as more important for the future-readiness of an organization than others. If the participant believes there are such characteristics, they are informed that the total weight of a dimension is 1 and the underlying weights could be distributed differently per characteristic as long as the total per dimension did not exceed 1. The weights are measured per dimension since there are some disagreements when it comes to which dimensions are more important than others. After which they are then asked to assign weights to the individual characteristics. The weights influence the score for the characteristics per dimension. For example, if the characteristics for digitalization are divided as 40% data, which is scored in M2, and 60% technology, which is scored in M3, the result for the digitalization dimension will be 2.6 and that is where the model will place the organization at.
The cases are closed by positioning the organization on the OFRAM, to validate the correctness and usefulness of the model. The colors used in the model are used solely for the distinction between the cases.

Table 9: Multiple-case study participants

Case	Role	Years of experience
Case A	Medior management consultant	3 years of experience
Case B	Medior management consultant	5 years of experience
Case C	Senior management consultant	30 years of experience
Case D	Medior management consultant	6 years of experience
Case E	Medior management consultant	7 years of experience

4.3.1 Case A

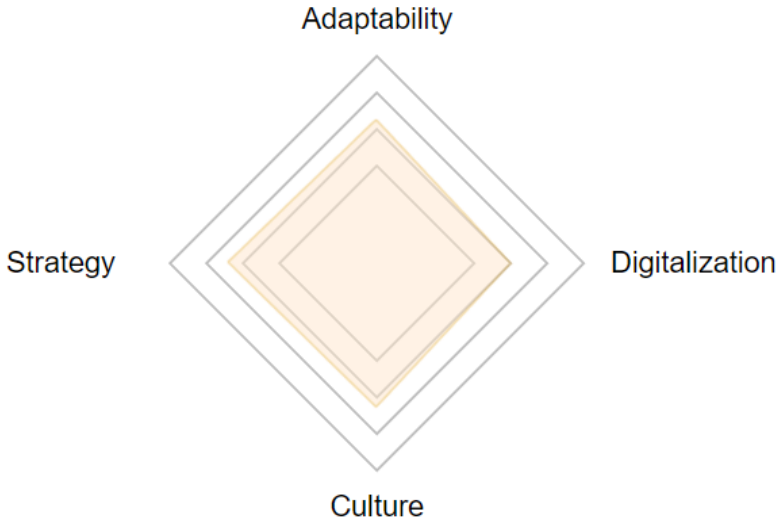
This case is executed together with a medior consultant, who worked within the researched case for about a year. After a general introduction to this research, the

case was discussed and presented. The case is an organization for which the participant did a project in the last year, to ensure they are able to score the organization properly. The scores of the characteristics are shown in Appendix C.1.
The first three characteristics were defined well and measurable, the participant found it easy to score the organization across the maturities. The first remark that the participant had is that for the agility of transformation the speed is dependent on other factors, like the operational backbone and the adaptive capabilities. The speed is also relative, what does fast or slow mean, making it hard to score. Therefore, the participant mentioned it could be better to measure the agility based on the difficulty an organization has to change, ranging from it is hard to change to easy and efficient. This is easier to score and less relative, there are still dependencies but according to the participant they will always be there within organization. They mention it is important to discuss these dependencies as a limitation for this research later on.
After this matter was discussed the case continued by assessing the digitalization of the organization, the participant approved the maturities levels for both characteristics and scored the organization easily. However one point of improvement came from the participant who suggested that M2 and M3 of data could be switched around, since in their opinion M3 comes first within organizations and M2 after M3 is in place.
When the culture dimension was reached, the participant had some remarks regarding the talent management characteristic. According to the participant this name was vague and not subsequent to the maturity levels. The maturity levels on the other hand were well defined and clear, so if something was to change here they suggested an adjustment in the name of the characteristic. As a suggestion they mentioned changing it to something like "Job crafting". The other aspects of this dimension however were designed as they would have expected it for this dimension. The participant found the final dimension convenient to interpret and score, finishing up the ranking of the organization.
To conclude this case, the participant was asked if they find certain characteristics more important than others, the participant certainly agreed and decided to assign weights to the characteristics showing which ones should have more influence to the model than others. The numbers in front of the characteristics, shown in Appendix C.1, show the assigned weights by the participant. Indicating that they thought that:

- The operational backbone is the most important aspect when it comes to adaptability
- Having integrated technology support your business processes is slightly more important than the data usage.
- Collaboration is the most important characteristic for the organizational culture, with both the other two sharing the same importance.
- For strategy, risk management and the digital strategy are equally important

Based on these results and remarks, the model (see Figure 6) is created for Case A. The organization of Case A is quite in balance with all dimension being in the second maturity level, however digitalization is trailing a bit in comparison to the others. So the possible advice from this model to the organization could be to invest more in their data and technology to help their digitalization and digital transformation process, so that other processes and dimensions could enhance their growth as well. The participant liked the idea of the model, as well as the resulting model for this case, and believes it can be used in practice.

Figure 6: OFRAM Case A



4.3.2 Case B

This case is executed in collaboration with another medior consultant. After being introduced to the research and planning for the case study, the case was discussed. The case is an organization for which the participant did a project in the last year. The scores of the characteristics are shown in Appendix C.2 and the comments will be discussed next.

The case started by going through the characteristics from top to bottom, starting with the adaptability dimension. The adaptive capability of an organization can be measured in the way it is defined now, however the participant suggested to link this to a percentage of the total resources of the organization for the first three maturity levels. Ranging from no resources in M1, to 10% in level to and 25% in level three. The last level, M4, should be that there is a dedicated budget for adapting, so the participant suggested to redefine the first three levels. The second characteristic, operational backbone, does not fit this dimension. In the participant's perspective, this is more applicable for the digitalization dimension. However, the defined maturity levels are defined well and measurable. So, for this case the participant was able to rank this characteristic within the adaptability dimension. The participant mentioned that innovation within the organization is an important characteristic, however the terms used within the definition as of now are vague to them. The theory and idea behind them are good, but the terminology leads to some vagueness. They suggested to add more quantitative values to the definitions and stay consistent with the terminology. They liked the term "incentive" and think it should be incorporated in all definitions to stay consistent and avoid misinterpretations. The last remark for this dimension was in regard with the agility characteristic. The participant emphasized on the difficulty it is to measure agility based on speed, and suggested to research into another way of measuring this characteristic. Despite these remarks the participant was able to score the organization across all characteristics.

The next topic of discussion was the digitalization of the organization. For this dimension the two characteristics to be measured were data and technology. Both of them were defined well and easy to measure, creating no hassle to score organizations on these characteristics.

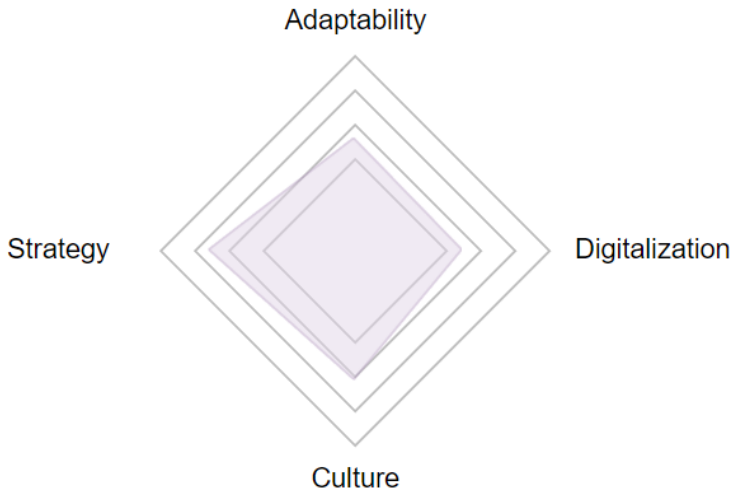
Following the digitalization, the participant was introduced to the culture dimension, being asked to score the organizational culture. The first characteristic, continuous

learning, was a misleading name for the participant. They were not expecting to score the personal motivations of the workforce. They suggested to change the name of the characteristic to a more fitting term, like intrinsic motivation. Apart from this adjustment, the participant considered themselves unable to score the organization on this characteristic. The participant ensured that they did not possess all the necessary knowledge to score this organization. When prompted to skip this whole dimension if they were uncomfortable scoring the organization on the following characteristics the participant ensured that they were capable of scoring the organization on the other characteristics. So, the case continued by discussing these, on which the participant had no points of improvement, and was able to score the organization. The last characteristics to measure before constructing the model were risk-management and digital strategy. For the first, the participant mentioned that it is hard to measure if you are ahead or in the middle of the majority and that including different levels of risk strategies could help. For the latter they just had to mention that it was defined nicely. Thus ending the scoring part of the case study.

When asked if they thought that different characteristics might be more important than others, the participant mentioned that all are important for an organization and that applying different weights on every characteristic did not seem applicable. Therefore, no weights are assigned for this case.

The model in Figure 7 is reached from these results. For this case, it can be concluded that the organization is developed well in their strategies but are trailing far behind with the other three dimension. So the takeaways, based on the OFRAM and Appendix C.2, for the organization are to invest in or adjust their operational backbone and agility to improve their adaptability. As well as, to invest more in data and technology to enhance their digital skills, improving their digitalization. They can also enhance their cultural dimension by redesigning the way they are collaborating within the organization. The participant emphasized that they could see the value this model can add to organizations and found the model to have a clear and concise design.

Figure 7: OFRAM Case B



4.3.3 Case C

This case is executed in collaboration with a senior consultant. After the introduction to the research and planning for the case study, the case could start. The case is a project which the participant managed this year. The scores of the characteristics are shown in Appendix C.3 and the remarks of the participant will be discussed below.

Case C started well with the participant finding no remarks to make on the first characteristics, adaptive capability, operational backbone and innovation, and finding it easy to score the organization on the maturity levels. However the next characteristic, agility, presented the first point of improvement the participant suggested. According to them, time is not relevant when looking at the agility of an organization, the ease of adapting would be more fitting, as well as easy, for measuring this characteristic.

Within the digitalization dimension, the participant found the second and third level interchangeable and suggest to switch these around, so M2 becomes M3 and vice versa. For technology, the maturities were clear and well defined.

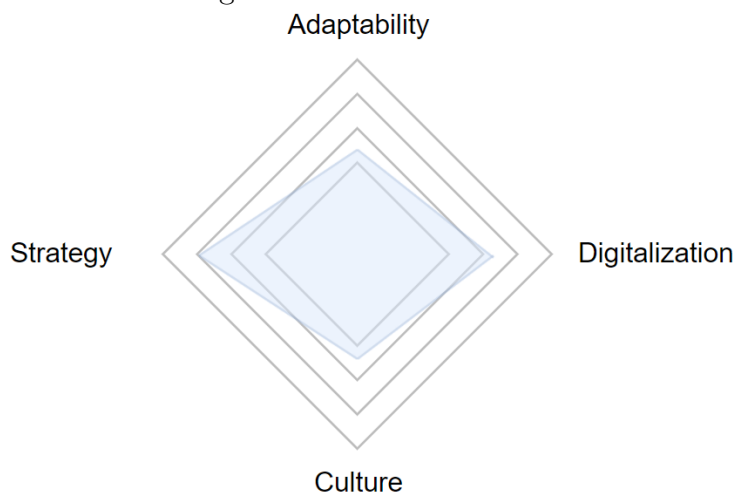
For the culture dimension the participant mentioned that the difference between the organization and workforce can be very dependent on the sector an organization is in. Therefore, they suggested to take the differences between sectors in mind when writing the limitations to this research. However, for this case this dimension was easy to understand and score. The participant emphasized that the culture is the

most important dimension when it comes to digital transformation and the agility of it.
The last dimension to score was the strategy dimension. For risk-management the participant had no remarks to make and said it was straight to the point. Nevertheless, for digital strategy they had mentioned that M2 and M3 felt the same to them. After a small explanation of the levels the participant acknowledged the distinction between the levels and retracted their statement.
To finish this case, the participant was asked if they find certain characteristics more important than others. The participant definitely found this to be true and assigned weights to the characteristics showing which ones should have more influence to the model than others. The numbers in front of the characteristics, shown in Appendix C.3, show the assigned weights by the participant. Indicating that they thought that:

- The agility is the most important aspect when it comes to adaptability, with the other 3 being similar.
- Having integrated technology support your business processes is slightly more important than the data usage.
- Collaboration is the most important characteristic for the organizational culture, with both the other two sharing the same importance.
- Having good and aligned strategies is somewhat more significant then the risk management of an organization.

The results from this case study lead to the model in Figure 8), that is created for Case C. For case C it is clear that their strategy is their strongest dimension, being in the third maturity. Followed by the digitalization which is in the second level. However the cultural and adaptability dimension both are still in the first maturity level. So the organization could improve their future-readiness by improving their collaboration, agility and operational backbone to lift themselves up to the next level. These recommendations are made on the low scores in the maturity assessment list, shown in Appendix C.3. The participant was enthusiastic about the idea of the model, as well as the resulting model for this case. It is very well designed and clear. They believe it can be used in practice to help organizations gain insights in their abilities.

Figure 8: OFRAM Case C



4.3.4 Case D

This case is executed in collaboration with another medior consultant. After being introduced to the research and planning for the case study, the case at hand was up for discussion. The case is an organization for which the participant did a project in the last year. The scores of the characteristics for this case are shown in Appendix C.4 and the points of improvement resulted from this case study will be discussed below.

Within the adaptability dimension the only point of improvement that the participant suggested was to change agility to the difficulty of adapting. They also mention that maturities for the remaining three characteristics were defined well and applicable for this case. Finishing scoring the adaptability dimension.

The participant found the digitalization dimension to be straightforward, with no points of improvements or remarks to add to it. Scoring the organization went quick and easy, which the participant expected of the well-defined characteristics and maturity levels.

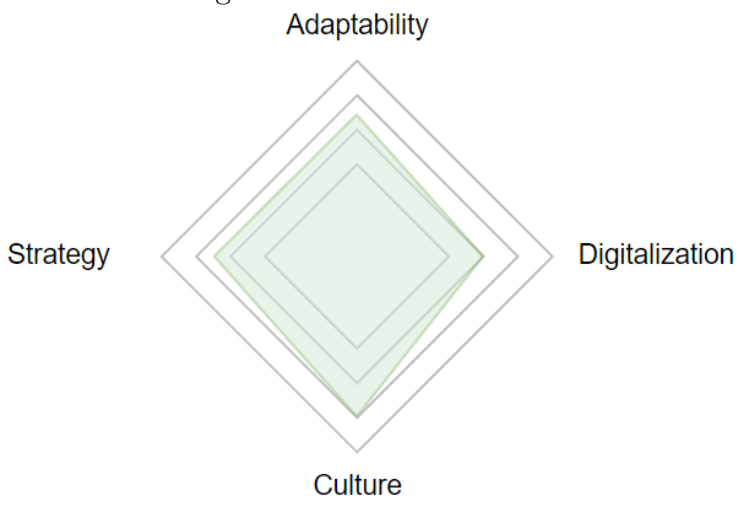
For the culture dimension, the participant liked the distinction between the bottom-up and top-down perspective on developing skills and talent. However the distinction should be made more clear by changing the names of continuous learning to intrinsic motivation, and talent management to extrinsic motivation. This way the perspectives are more clear. On the other hand, the maturity levels were accurate to the characteristic and defined well, according to the participant. Regarding the

collaboration within the organization they did not have any remarks, which finalizes the measuring of this dimension.
Regarding the strategy dimension, the participant found both characteristics to be clear and easy to score.
To finish this case, the participant was asked if they find certain characteristics more important than others. The participant found this to be partially true in some dimensions and assigned weights to the characteristics. The numbers in front of the characteristics, shown in Appendix C.4, show the assigned weights by the participant. Indicating that they found that:

- The adaptive capability and operational backbone are equal and the most important aspect when it comes to adaptability, with the remaining being of the same importance as well.
- Having integrated technology support your business processes is as important than the data usage and skills within an organization.
- Collaboration is the most important characteristic for the organizational culture. Closely followed by the talent management, leaving the personal motivation of the workforce as least important characteristic for a future-ready organizational culture.
- Having good and aligned strategies is equally significant as the risk management of an organization.

These results lead to the OFRAM in Figure 9), that is created for Case D. The model shows that this organization has developed their culture and strategy quite well but are trailing on the digitalization dimension. So, the advice to the organization, based on Appendix C.4 could be to develop their technologies to better support their business process. In addition to developing their data usage and skills to increase the effect the digitalization has on the organization's ability to be future-ready. The participant liked the constructed model, as well as the value it can bring for organizations. They mentioned that they could see this model being used in practice.

Figure 9: OFRAM Case D



4.3.5 Case E

This case is executed in collaboration with another medior consultant. After being introduced to the research and planning for the case study, the case was discussed. The case is an organization for which the participant did a project in the last year. The scores of the cases are shown in Appendix C.5 and the comments will be discussed next.

The adaptability of an organization is the first dimension that was discussed. The participant found that the maturity levels of adaptive capability needed to be quantified. Especially level M1, since they expected that an organization will never be scored on this level because every organization that underwent a digital transformation project has some resources available for change. Additionally, they suggested to quantify all the maturity levels of this characteristic by linking to the run-change budget of an organization. This budget shows the division between the resources needed for day-to-day operations and the resources available for change management. According to the participant a ratio of 60-40 run-change budget can be defined as the ideal level. They also mention that most organization use the term "change" instead of "adapting" and suggested that this research could facilitate the societal problem better by changing the name of the characteristic to change capabilities. The remaining characteristics, operational backbone, innovation and agility, were defined correctly according to the participant. However, they mentioned that future research could look further into the dependencies between the characteristic.

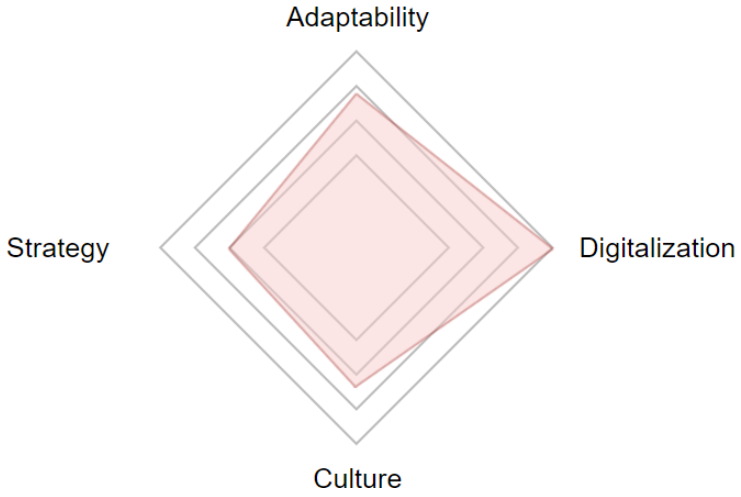
Regarding the digitalization dimension, the participant had no troubles with scoring the characteristics on the maturity levels. They liked the specific focus these characteristics were given.
The results of the culture dimension came naturally from the participant. They mentioned that this was a straightforward dimension and it was easy for them to score the organization at hand on it.
For the strategy dimension the participant mentioned that risk management is called "Risk appetite" within most organizations, however this does fall within the risk management characteristic. So, they did suggest a name change. However, the found literature did not support this adjustment so no adjustment was made. The digital strategy was clear and easy to score, so they had no remarks on that characteristic.
To finish this last case, the participant was asked if they can see certain characteristics to be of a higher importance than others. The participant acknowledged this idea and was asked to assign weights to the characteristics. The numbers in front of the characteristics, shown in Appendix C.5, show the assigned weights by the participant. Indicating that they found that:

- The operational backbone is the most important aspect when it comes to adaptability, with the remaining being of a much lower importance.
- Having integrated technology support your business processes is as important than the data usage and skills within an organization.
- Collaboration is the most important characteristic for the organizational culture. Followed by the talent management and continuous learning, as these two are of the same importance.
- Having good and aligned strategies is equally important to the risk management of an organization.

Based on the results of Appendix C.5, the OFRAM is created. (see Figure 10). This organization excels at digitalization, scoring in the highest maturity for both technology as data. Followed by all three characteristics in the second maturity level, with adaptability closing in on the third maturity while culture and strategies are in the lower end of this level. The participant liked the value this model can

deliver to organization. They found the model to be designed well and believe it can be used in practice.

Figure 10: OFRAM Case E



4.3.6 Overview of the case study results

Table 10 presents the main takeaways from the multiple-case study, in no particular order, and which actions have been taken to improve this research based on these points. The adjustments lead to the final version of the characteristics maturity assessment list, depicted in Appendix D.

Table 10: Overview of the multiple-case study results

Source	Main takeaways	Taken actions
Case A, B, C, D & E	Dependencies between characteristics should be mentioned and researched further	This will be included in the future research part, section 5.3, of the discussion
Case A, B, C & D	Measuring agility in speed is difficult	Changing it to measuring it in difficulty
Case A, C, D & E	The most important characteristics based on rankings	This is included in the answer of SQ3
Case A, B & C	Switch M2 and M3 of data around	M2 and M3 of data are switched around

Case A, B & D	Term continuous learning is not aligned with the maturity levels	Change the name to "Intrinsic motivation"
Case A, B & D	Talent management is misleading	Changing the characteristic to "Extrinsic motivation"
Case B & E	Quantify the first three levels of adaptive capability	Put in perspective by relating it the run-change budget
Case E	Level 1 of adaptive capability will most likely never be selected, since every organization has some resources	Changed the quantity of resources needed for M1 to align it with the other levels as well
Case E	Organizations use change instead of adapt when it relates to resources	Changed the name of the characteristic adaptive capability to change capabilities, this also improves continuity with the run-change budget

This section was aimed to answer SQ3 and SQ6. The cases concluded that the model is designed well and the characteristics and maturities are accurate and measurable. Thus, answering SQ6 by having validated the OFRAM. The assigned weights in Cases A, C, D & E provided the needed input to answer SQ3, creating a ranking for the characteristics per dimension. The total of amount of divided points is 4 per dimension. By adding up the weights from the different cases per characteristic, an analysis is possible by prioritizing the characteristic with the highest sum of weights out of 4.

For the adaptability dimension, with a score of 1.5 out of the total 4 points, the operational backbone is the most important characteristic. Change capabilities follows it up with a score of 1 out of 4. Next is the agility with a score of 0.9 out of 4. Lastly is the innovation with a score of 0.6 out of 4.

Within the digitalization dimension the scores were close to one other, with technology scoring 2.2 out of 4 and data 1.8 out of 4. Meaning that technology is the main driver of the digitalization dimension.

The ranking within the dimension of culture is more decisive, collaboration takes the top spot with a score of 2.2 out of the 4. With more than a whole point lower,

the extrinsic motivation sits in second place. The last spot of this dimension is the intrinsic motivation, scoring 0.75 out of the 4 points.
Strategy was the last dimension, where the scores were similar to the digitalization dimension. Here the digital strategy is the most important characteristic with a score of 2.2 out of 4, while risk management ranks second with a score of 1.8 out of 4. The full and clear overview is listed below.

- Adaptability:
    1. Operational backbone
    2. Change capabilities
    3. Agility
    4. Innovation
- Digitalization:
    1. Technology
    2. Data
- Culture:
    1. Collaboration
    2. Extrinsic motivation
    3. Intrinsic motivation
- Strategy:
    1. Digital strategy
    2. Risk management

The aim of this whole chapter was to validate the results of the literature study and the created model. After the case studies, the conclusion can be drawn that the model and its maturity levels are defined well and usable after the changes mentioned in table 10 are implemented. The implemented changes can be found in Appendix D. The findings from the literature that were needed to answer and validate the research questions have been analyzed by the interviews and multiple-case study in this section. Which indicates the end of this chapter. The next chapter will discuss the possible interpretations to the key findings as well as future research suggestions.

5 Discussion

This section discusses the possible implications of the findings from the previous sections. Followed by the limitations of this research and suggestions for future research topics.

5.1 Possible interpretations

This section will discuss the multiple possible interpretations of the gathered results, starting with the literature and continuing with the interviews and ending it with the case study results.
As this is an exploratory research many different perspectives on this subject were gathered from the literature. Thus, allowing multiple interpretations of the results from the MLR. A couple of interesting patterns came up, the first being the constant usage of the same dimensions, Culture, Technology, Strategy and Organization. These were included in most of the discussed models and were interpreted as necessary for the accurate positioning of an organization. However, as mentioned in section 4.2, the choice was made to look into the adaptability of organizations and including that as the fourth dimension instead of organization. This choice was made due to an interpretation that the other methods mostly look at (digital) capabilities, which include organizational capabilities. While this research wants to plot organizations on organizational characteristics, making the organization dimension redundant.
The designation of the sub-characteristics is the next point of discussion. As the names of certain characteristics were interpreted differently per article and participant, as the literature, interviews and case studies depicted. Even though there were some participants that suggested the same name for a characteristic, there were others that suggested a different name. Leaving the choice of naming the characteristics as most fitting to the researcher. The researcher chose to name the characteristic as the name that is partially substantiated by the literature but also used within organizations, to also facilitate the practical use of the OFRAM. However, one can choose to facilitate more into either side, organizational or scientific, to explore the characteristics more.
Within the interviews, the participants were more or less on the same level of understanding. Mostly suggesting the same points of improvements, and approving

the parts which were defined well. However, this could be interpreted differently if the participants were not from the same organization. Which is a limitation for this research that will be discussed in the next section. When trying to rank the characteristics, the same pattern emerged. The participants were mostly giving the same scores. However, the discussion about which dimension is more important is completely different. The importance of the dimension could not be ranked since too many different perspectives and opinions resulted from the literature, interviews and case studies. The researcher interpreted this by not ranking the dimensions but only the sub-characteristics.
In general, the possible alternative explanations will come from executing this research with different interview and case study participants.

5.2 Limitations

This research did not come without any limitations. This section will dive deeper into the limitations that presented themselves during the project.
Previously in this research, in section 2.10, the threats to validity were discussed as well as the actions that were proposed to take to mitigate them. Now at the end of the research, it is time to analyze if these threats were actually mitigated and if other threats presented themselves and how they were handled.
Before the actual research started, the researcher mentioned to ensure the conclusion, internal, external and construct validity and additionally the reliability of the research. Firstly, for the external validity, the generalizability of this research will be discussed. The researcher expected to mitigate this threat by using different cases in the multiple-case study. Even though the researcher managed to go through with this, the generalizability is still not guaranteed unfortunately. This is still a limitation because the topic at hand has many variables, like organizational sectors, countries, etc. that could not be included in this research because of the limited time frame. This research managed to include five cases within different sectors, but that still leaves many sectors open. Also, all the cases were organizations within the Netherlands, weakening the generalizability for international organizations.
The next limitation of this research concerns the construct validity, and especially the subject bias part. The researcher previously mentioned to mitigate this by partially masking the true purpose of the study to the participants, so that they will be less likely to give biased answers. However, during the interviews and case studies it

became clear that the participants required a good introduction to get a feel of this research's scope. However, now the introduction included the scope of the research as an exploratory study to find relevant concepts to future-ready organizations. The participants know that the aim is to find relevant and important concepts, but not what concepts the researcher finds relevant. The participants are asked to give their expert opinions about the presented results, and are thus allowed to disagree and suggest changes to certain concepts. Which occurred often, as the interview and case study results show.

The occurred conclusion-, internal validity threats were predicted accurately in the previous section. So, the steps to mitigate them were defined and worked well.

The only other threat that occurred and needed to be mitigated was the reliability of this research. Within reliability lies the repeatability of the research and for this research this is a threat. Since some of the data used was accessed through the sources of AMG and academic search machines as WorldCat and Google Scholar. To repeat this research the next researcher needs to have access to these same sources and people. Especially the latter is difficult, the researcher was able to contact the participant since the researcher had access to the systems and people of AMG because this research is partially executed with their help. If somebody from outside the organization wishes to obtain the same results, it can only be done by contacting AMG to possibly interview consultants. Gathering the literature from AMG is not the issue, since they have published their whitepapers on their website. However for WorldCat the optimised entry for Utrecht University students and employees is used. The steps that were taken for the gathering of all the data are described extensively in section 2.3, but the researcher cannot give access to these sources to the next researcher. That is the only threat to the repeatability of this research.

The last limitations of this research are related to the time constraint. The first one being that the studied concepts can evolve over time, since this research focuses on the future-ready aspect. In a couple years the characteristics and definition of a future-ready organizations could be different. This topic basically becomes a vicious circle, requiring constant updates to the defined concepts. And the last limitation of this research is, that this research is a master thesis and therefore is limited to a certain time frame. Even when the constraint is somewhat flexible for Business Informatics at Utrecht University, the research project should be finished within about 8 months. This in combination with the researchers goal to finish their studies at the end of July leads to a limited time frame. Within this time frame it is possible

to only research a limited amount of concepts. Which leaves many perspectives and concepts related to this topic undiscovered. These concepts will be discussed in the next section about possibilities for future research.

5.3 Future research

Considering the limited existing research on future-ready organizations, this research identified multiple suggestions for future research opportunities. The first opportunity lies in the characteristics of ecosystem-centrality and brand, as these were defined as important characteristics by the literature. But the interviews showed that measuring these characteristics and the impact on an organization can be a different research projects on their own. The researcher therefore suggest to dive deeper in these characteristics and discover their relation with future-readiness.
These are not the only topics that could extent and complement this research. This model and research could be extended by researching other (non-)organizational concepts. Since this research was limited on time, as mentioned above, the researcher was unable to take every dimension and concept into account and chose to focus on four dimensions. By looking at the other dimensions in the presented literature this model can be expanded. The researcher chose for this design to the OFRAM since it can easily be expanded if new dimensions or maturities are defined. The used characteristics and maturities are also still on a generalized level and could be researched more deeply to be able to quantify and measure some characteristics more accurately.
From the interviews and case studies came the suggestion to research further into the dependencies between the characteristics. Since all of the characteristic have some influence on each other, it can make a very interesting research into how the characteristics relate to each other. This also helps this research, since it provides an even clearer image of a future-ready organization.
The last suggestion the researcher makes for a future research is that the next researchers could help by executing comparative studies. With these types of studies the contextual aspects of future-ready organizations will be researched. This can influence the concepts of a future-ready organization by comparing factors as countries, cultures and sectors. These studies will give a more clear perspective on how a future-ready organization looks in different contexts.

6 Conclusion

In this section, the main research questions will be answered based on the answers of the sub-research questions. With the results from the literature, interviews and multiple-case study the sub-research questions can be answered.

First SQ: What is a Future-ready organization?

The answer to this SQ is the created and evaluated definition: "A future-ready organization is an entity that is capable of adapting flexibly to a constantly changing business environment while maintaining its ability to innovate and deliver value to its stakeholders. It is well prepared for upcoming challenges and proactive in its approach to adapt, by continuously learning and innovating to remain ahead of the competition. All while still remaining true to its nature, purpose and organizational values."

Second SQ: What are key concepts of other methods that measure an organization's capabilities?

To answer this question, methods as maturity models, digital capability frameworks, organizational resilience frameworks, the competing values model and the business activity model have been analyzed. The key concepts that other methods use are the dimensions and maturities. Most methods use 6 dimensions and 4 maturities. These concepts influenced the designs decisions for the OFRAM.

Third SQ: How can the characteristics be ranked based on importance?

This SQ can be answered by analyzing the assigned weights in the case studies. Four out of the five participants found that there should be some sort of a ranking for the characteristics within the dimensions. The analysis of the cases resulted in the following ranks from highest to lowest within the dimensions:

- Adaptability:
  (a) Operational backbone
  (b) Change capabilities
  (c) Agility
  (d) Innovation
- Digitalization:

(a) Technology
(b) Data

- Culture:
  (a) Collaboration
  (b) Extrinsic motivation
  (c) Intrinsic motivation
- Strategy:
  (a) Digital strategy
  (b) Risk management

Fourth SQ: What is the relation between multi-modality and future-ready?

The relation between multi-modality and future-ready unfortunately could not be defined within this research. The business activity model provided many characteristics that could be used for defining the dimensions and maturity levels. However, there were too many differences between these characteristics and the defined characteristics and maturities from the literature. Making the creation of a link or relation between these two concepts not possible.

Fifth SQ: How to create a maturity model for future-readiness?

The creation of a maturity model is defined by the results from the literature review and interviews. The dimensions are derived from the literature, while the characteristics and their maturity levels are created by the literature but evaluated and improved by the expert interviews. Which lead to the conceptual future-ready maturity assessment list and OFRAM.

Sixth SQ: How to validate a maturity model for future-readiness?

The OFRAM was validated by the execution of a multiple-case study. Each case was individually analyzed based on the scores and remarks from the participant. Followed by an analysis of the entire multiple-case study, presenting all the takeaways to find similar points of improvements from multiple cases. So at the end of the case study there were general points of improvements that could be substantiated by multiple cases and lead to actual adjustments to the conceptual versions of the OFRAM and the future-ready maturity assessment list. Thus, validating the OFRAM.

These answers facilitate towards the answer to the **main research question:** *What are key organizational characteristics that can classify an organization's ability to be Future-ready?*

The key organizational characteristics that can be used to position an organization's ability to be future-ready are divided into four main characteristics, ***Adaptability, Digitalization, Culture and Strategy***. In combination with the following sub-characteristics, somebody can position an organization accurately on their ability to be future-ready on the dimensions. The sub-characteristics are: *Operational backbone, Change capabilities, Agility, Innovation, Technology, Data, Collaboration, Extrinsic motivation, Intrinsic motivation, Digital strategy and Risk management.*

References

Adams, R. J., P. Smart, and A. S. Huff. 2017. "Shades of Grey: Guidelines for Working with the Grey Literature in Systematic Reviews for Management and Organizational Studies" [in en]. *International Journal of Management Reviews* 19 (4): 432–454. ISSN: 1468-2370, accessed March 6, 2023. https://doi.org/10.1111/ijmr.12102. https://onlinelibrary.wiley.com/doi/abs/10.1111/ijmr.12102.

Ampatzoglou, A., S. Bibi, P. Avgeriou, M. Verbeek, and A. Chatzigeorgiou. 2019. "Identifying, categorizing and mitigating threats to validity in software engineering secondary studies" [in en]. *Information and Software Technology* 106 (February): 201–230. ISSN: 0950-5849, accessed February 15, 2023. https://doi.org/10.1016/j.infsof.2018.10.006. https://www.sciencedirect.com/science/article/pii/S0950584918302106.

Anderson, C., and W. Ellerby. 2018. *Digital Maturity Model,* February. https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Technology-Media-Telecommunications/deloitte-digital-maturity-model.pdf.

Antonizzi, J., and H. Smuts. 2020. "The Characteristics of Digital Entrepreneurship and Digital Transformation: A Systematic Literature Review" [in en]. In *Responsible Design, Implementation and Use of Information and Communication Technology,* edited by M. Hattingh, M. Matthee, H. Smuts, I. Pappas, Y. K. Dwivedi, and M. Mäntymäki, 239–251. Lecture Notes in Computer Science. Cham: Springer International Publishing. ISBN: 978-3-030-44999-5. https://doi.org/10.1007/978-3-030-44999-5_20.

APA. 2020. *Publication manual of the American Psychological Association, 7th ed.* Publication manual of the American Psychological Association, 7th ed. Pages: xxii, 427. Washington, DC, US: American Psychological Association. ISBN: 978-1-4338-3216-1. https://doi.org/10.1037/0000165-000.

Berghaus, S. 2016. "Stages in Digital Business Transformation: Results of an Empirical Maturity Study" [in en].

Blank, S. 2013. "Why the Lean Start-Up Changes Everything" [in en] (May).

Bonnet, D., and G. Westerman. 2020. "The New Elements of Digital Transformation" [in en-US]. *MIT Sloan Management Review* 62, no. 2 (November). Accessed March 24, 2023. https://sloanreview.mit.edu/article/the-new-elements-of-digital-transformation/.

Braun, V., and V. Clarke. 2013. *Successful qualitative research: a practical guide for beginners* [in en]. OCLC: ocn811733656. Los Angeles: SAGE. ISBN: 978-1-4462-8102-4.

Bumann, J., and M. Peter. 2019. "Action Fields of Digital Transformation - A Review and Comparative Analysis of Digital Transformation Maturity Models and Frameworks," 13–40. November. ISBN: 978-3-906129-97-6.

Christensen, C. M., M. Raynor, and R. McDonald. 2015. "What Is Disruptive Innovation?" [In en] (December).

De Smet, A., C. Gagnon, and E. Mygatt. 2021. *Nine keys to becoming a future ready company — McKinsey,* January. Accessed April 10, 2023. https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/organizing-for-the-future-nine-keys-to-becoming-a-future-ready-company#/.

Deloitte. 2023a. *Organizational Resilience* [in en-ca]. Accessed April 17, 2023. https://www2.deloitte.com/ca/en/pages/risk/topics/organizational-resilience.html.

———. 2023b. *The future-ready organization* [in en-ca]. Accessed April 12, 2023. https://www2.deloitte.com/ca/en/pages/consulting/articles/the-future-ready-organization.html.

Garousi, V., M. Felderer, and M. V. Mäntylä. 2019. "Guidelines for including grey literature and conducting multivocal literature reviews in software engineering" [in en]. *Information and Software Technology* 106 (February): 101–121. ISSN: 09505849, accessed March 6, 2023. https://doi.org/10.1016/j.infsof.2018.09.006. https://linkinghub.elsevier.com/retrieve/pii/S0950584918301939.

Gill, M., and S. VanBoskirk. 2016. "The Digital Maturity Model 4.0" [in en].

Grenny, J., K. Patterson, R. McMillan, A. Switzler, and E. Gregory. 2022. *Crucial Conversations* [in da]. 3rd edition. New York: McGraw Hill. ISBN: 978-1-260-47419-0.

Guthridge, M., A. B. Komm, and E. Lawson. 2008. "Making talent a strategic priority" [in en]. *The McKinsey Quarterly,* no. 2008 Number 1.

Huxham, C., and S. Vangen. 2013. *Managing to Collaborate: The Theory and Practice of Collaborative Advantage* [in en]. Google-Books-ID: YYt4AAAAQBAJ. Routledge, August. ISBN: 978-1-134-30167-6.

Ike Orji, C. 2019. *DIGITAL BUSINESS TRANSFORMATION: TOWARDS AN INTEGRATED CAPABILITY FRAMEWORK FOR DIGITIZATION AND BUSINESS VALUE GENERATION - ProQuest* [in en]. Accessed June 2, 2023. https://www.proquest.com/openview/7b4139875e90c42131e64e23937b3f5b/1?pq-origsite=gscholar&cbl=38740.

Jiménez-Jiménez, D., and R. Sanz-Valle. 2011. "Innovation, organizational learning, and performance" [in en]. *Journal of Business Research* 64, no. 4 (April): 408–417. ISSN: 01482963, accessed April 18, 2023. https://doi.org/10.1016/j.jbusres.2010.09.010. https://linkinghub.elsevier.com/retrieve/pii/S0148296310001906.

Lazar, J., and J. H. Feng. 2017. "RESEARCH METHODS IN HUMAN-COMPUTER INTERACTION" [in en].

Lee, A., J. Vargo, and E. Seville. 2013. "Developing a Tool to Measure and Compare Organizations' Resilience." *Natural Hazards Review* 14 (February): 29–41. https://doi.org/10.1061/(ASCE)NH.1527-6996.0000075.

McAfee, A., and E. Brynjolfsson. 2012. "Big Data: The Management Revolution" [in en] (October).

Melhem, S., and A. H. Jacobsen. 2021. *A global studies on digital capabilities.* https://documents1.worldbank.org/curated/en/959181623060169420/pdf/A-Global-Study-on-Digital-Capabilities.pdf.

Nanda, R., S. Roddick, R. Gurumurthy, and D. Golden. 2021. *A new approach that transcends technology* [in en-us], September. Accessed April 19, 2023. https://www2.deloitte.com/us/en/insights/topics/digital-transformation/digital-transformation-approach.html.

Nasution, R., L. Rusnandi, E. Qodariah, D. Arnita, and N. A. Windasari. 2018. "The Evaluation of Digital Readiness Concept: Existing Models and Future Directions." *The Asian Journal of Technology Management (AJTM)* 11 (December): 94–117. https://doi.org/10.12695/ajtm.2018.11.2.3.

Nieuwmeijer, L., and A. Sprokholt. 2022. *Multimodality – What is up with our quadrants?,* May.

O'Hea, K. 2011. "Digital Capability – How to Understand, Measure, Improve and Get Value from it" [in en] (October).

Peffers, K., T. Tuunanen, M. A. Rothenberger, and S. Chatterjee. 2007. "A Design Science Research Methodology for Information Systems Research." Publisher: Routledge _eprint: https://doi.org/10.2753/MIS0742-1222240302, *Journal of Management Information Systems* 24, no. 3 (December): 45–77. ISSN: 0742-1222, accessed March 5, 2023. https://doi.org/10.2753/MIS0742-1222240302. https://doi.org/10.2753/MIS0742-1222240302.

Perera, S., X. Jin, P. Das, K. Gunasekara, and M. Samaratunga. 2023. "A strategic framework for digital maturity of design and construction through a systematic review and application" [in en]. *Journal of Industrial Information Integration* 31 (February): 100413. ISSN: 2452414X, accessed June 29, 2023. https://doi.org/10.1016/j.jii.2022.100413. https://linkinghub.elsevier.com/retrieve/pii/S2452414X22000802.

Podsakoff, P., S. MacKenzie, and N. Podsakoff. 2016. "Recommendations for Creating Better Concept Definitions in the Organizational, Behavioral, and Social Sciences." *Organizational Research Methods* 19 (January). https://doi.org/10.1177/1094428115624965.

Porfírio, J. A., T. Carrilho, J. A. Felício, and J. Jardim. 2021. "Leadership characteristics and digital transformation" [in en]. *Journal of Business Research* 124 (January): 610–619. ISSN: 0148-2963, accessed January 19, 2023. https://doi.org/10.1016/j.jbusres.2020.10.058. https://www.sciencedirect.com/science/article/pii/S0148296320307360.

Quinn, R. E., and K. S. Cameron. 1999. "Diagnosing and changing orgnaizational culture." *Reading: Addison-Wesley.*

Rainer, A., and A. Williams. 2019. "Heuristics for improving the rigour and relevance of grey literature searches for software engineering research" [in en]. *Information and Software Technology* 106 (February): 231–233. ISSN: 0950-5849, accessed February 15, 2023. https://doi.org/10.1016/j.infsof.2018.10.007. https://www.sciencedirect.com/science/article/pii/S0950584918302192.

Rakowska, A., and S. de Juana-Espinosa. 2021. "Ready for the future? Employability skills and competencies in the twenty-first century: The view of international experts" [in en]. Publisher: IOS Press, *Human Systems Management* 40, no. 5 (January): 669–684. ISSN: 0167-2533, accessed January 19, 2023. https://doi.org/10.3233/HSM-201118. https://content.iospress.com/articles/human-systems-management/hsm201118.

Ross, J. W., C. M. Beath, and M. Mocker. 2019. *Designed for digital: How to architect your business for sustained success (Management on the Cutting Edge).* MIT Press.

Sarta, A., R. Durand, and J.-P. Vergne. 2021. "Organizational Adaptation." Publisher: SAGE Publications Inc, *Journal of Management* 47, no. 1 (January): 43–75. ISSN: 0149-2063, accessed April 18, 2023. https://doi.org/10.1177/0149206320929088. https://doi.org/10.1177/0149206320929088.

Sia, S. K., P. Weill, and N. Zhang. 2021. "Designing a Future-Ready Enterprise: The Digital Transformation of DBS Bank" [in en]. Publisher: SAGE Publications Inc, *California Management Review* 63, no. 3 (May): 35–57. ISSN: 0008-1256, accessed January 19, 2023. https://doi.org/10.1177/0008125621992583. https://doi.org/10.1177/0008125621992583.

Siau, K., and M. Rossi. 2011. "Evaluation techniques for systems analysis and design modelling methods – a review and comparative analysis" [in en]. _Eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1365-2575.2007.00255.x, *Information Systems Journal* 21 (3): 249–268. ISSN: 1365-2575, accessed March 12, 2023. https://doi.org/10.1111/j.1365-2575.2007.00255.x. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2575.2007.00255.x.

Smith, I. 2005. "Achieving readiness for organisational change." Publisher: Emerald Group Publishing Limited, *Library Management* 26, nos. 6/7 (January): 408–412. ISSN: 0143-5124, accessed January 19, 2023. https://doi.org/10.1108/01435120510623764. https://doi.org/10.1108/01435120510623764.

Soest, C. von. 2022. "Why Do We Speak to Experts? Reviving the Strength of the Expert Interview Method" [in en]. *Perspectives on Politics* (June): 1–11. ISSN: 1537-5927, 1541-0986, accessed February 15, 2023. https://doi.org/10.1017/S1537592722001116. https://www.cambridge.org/core/product/identifier/S1537592722001116/type/journal_article.

Taylor, D. 2022. *Council Post: How Companies Can Become Future-Proof* [in en]. Section: Small Business, September. Accessed April 10, 2023. https://www.forbes.com/sites/forbesbusinesscouncil/2022/09/30/how-companies-can-become-future-proof/.

Verheyen, G. 2019. "Scrum - A Pocket Guide" [in en].

Vial, G. 2019. "Understanding digital transformation: A review and a research agenda" [in en]. *The Journal of Strategic Information Systems* 28, no. 2 (June): 118–144. ISSN: 09638687, accessed February 11, 2023. https://doi.org/10.1016/j.jsis.2019.01.003. https://linkinghub.elsevier.com/retrieve/pii/S0963868717302196.

Voß, F. L. V., and J. M. Pawlowski. 2019. "Digital Readiness Frameworks" [in en]. In *Knowledge Management in Organizations,* edited by L. Uden, I.-H. Ting, and J. M. Corchado, 503–514. Communications in Computer and Information Science. Cham: Springer International Publishing. ISBN: 978-3-030-21451-7. https://doi.org/10.1007/978-3-030-21451-7_43.

Weick, K. E., and K. M. Sutcliffe. 2011. *Managing the Unexpected: Resilient Performance in an Age of Uncertainty* [in en]. Google-Books-ID: GU55MJOp1OcC. John Wiley & Sons, January. ISBN: 978-0-470-53423-6.

Weill, P., and S. L. Woerner. 2018. *Is Your Company Ready for a Digital Future? - ProQuest* [in en]. Accessed March 14, 2023. https://www.proquest.com/openview/3d99041b0ac812f96c4cc918f5fc7dd9/1?pq-origsite=gscholar&cbl=26142.

Westerman, G., D. Bonnet, and A. McAfee. 2014. *Leading Digital: Turning Technology Into Business Transformation* [in en]. Google-Books-ID: Fh9eBAAAQBAJ. Harvard Business Press. ISBN: 978-1-62527-247-8.

Woerner, S. L., P. Weill, and I. M. Sebastian. 2022. *Future Ready: The Four Pathways to Capturing Digital Value* [in en]. Google-Books-ID: 8alYEAAAQBAJ. Harvard Business Press, October. ISBN: 978-1-64782-350-4.

Yu, H., J. Shan, A. Boutalikakis, L. Tempel, and Z. Balian. 2022. "What Makes a Company "Future Ready"?" Section: Innovation, *Harvard Business Review* (March). ISSN: 0017-8012, accessed April 11, 2023. https://hbr.org/2022/03/what-makes-a-company-future-ready.

A Digital Maturity table

Figure 11: Maturity table part 1

Table 1
Early, transition and mature stage characteristics.

No.	Source	Early stage characteristics	Transitioning stage characteristics	Mature stage characteristics
1	Eremina, Lace [51] *Digital Maturity and Corporate Performance: The Case of the Baltic States*	**General:** Important and basic parts of modern life that represent the foundations of the digitalisation process. Innovation, technology, R&D, research, software, digital, computer programming, cloud, platform, wireless, server. **Online:** Activities performed on the global network. Various businesses or government structures provide online services, collect and distribute information, and interact with customers and partners. Eg: social network, e-commerce, web, online, internet, website.	**Internet of Things:** Refers to the overall connectivity amongst modern objects and vehicles within one network. Eg: Intelligent things, vehicle to everything (V2X), connected objects, sensor, actuator, adaptive architecture, intelligent solutions, V2V **Process automation:** Refers to the integration of technologies in the operational processes of a business. Factors included in this group suggest the existence of technological and technical innovation. Eg: automation, robotisation, 3D printing, industry 4.0, autonomous devices, asset tracking, Smart	**Artificial intelligence (AI):** Refers to intelligent machines. These are programs that simulate human cognitive abilities. Eg: machine learning, artificial intelligence, neural network, deep learning **Data science:** Digitalisation is often associated with large databases with information about customers and suppliers, statistical data of previous years, record keeping, and other significantly important information. These data are an inevitable part of the analyses and forecasts used for the stable operations and sustainable growth of the company. Eg: predictive analytics, big data, user behaviour, data analytics, data feed, data management
2	Diller, Asen [32] *The effects of personality traits on digital transformation: Evidence from German tax consulting*	**Digital communication**: Digital newsletters, job adverts, and a well-structured homepage reflect the wish for digital communication	**Digital collaboration:** Digital format of all types of documents is an inevitable prerequisite of collaboration on a digital basis. **Interconnectivity:** Digital data exchange with banks and tax authorities	**Business model transformation:** Items included are necessary to create new business models or show how the company is strategically adapting to digital change **Remote access:** VPN access, cloud computing and home office opportunities facilitate working off the company's premises and show how the company is embracing remote work
3	Pirola, Cimini [29] *Digital readiness assessment of Italian SMEs: a case-study research*	**Digital Readiness Level 1:** IT systems support only few processes (processes are partially digitised or not digitised at all). The skills needed to expand Industry 4.0 are found only in few areas of the company. Horizontal integration and internal information sharing are limited while no integration is foreseen with other actors of the value chain.	**Digital Readiness Level 2:** An intermediate-level company that includes Industry 4.0 into its strategic orientation. The company is planning some pilot initiatives. IT systems support routine activities (processes are quite digitised). Current infrastructure allows some process integration. Automatic and real time collection of data regards only some production data and it is used to a limited extent. Horizontal integration and internal information sharing is limited to some areas and the first steps are being taken to integrate data with value chain members. Employees own the necessary skills with respect to Industry 4.0 only in some areas. **Digital Readiness Level 3:** A company that has formulated an Industry 4.0 strategy and is investing to promote the introduction of smart manufacturing. IT systems support most of the processes, and the current infrastructure allows process integration. Data are automatically collected in real time in key areas of production. Information sharing, both internal and with external actors, is partially integrated into the system. At this level, the company manufactures products equipped with IT-based functionalities, enabling the provision of first data-driven services, which still account for a small share of revenues. Efforts to expand employee skills are in place.	**Digital Readiness Level 4:** A company which is already implementing an Industry 4.0 strategy, monitoring its development with suitable indicators. The company is horizontally and vertically integrated, and Industry 4.0 requirements have been implemented within the company, automating information flows. Investments concern nearly all relevant areas, and an interdepartmental innovation management supports the process. Data about production processes are collected and used for optimisation. Information sharing is largely integrated into the system, both internally and with value chain partners. The products feature IT-based functionalities, allowing data collection during the usage phase, enabling and supporting data-driven services. Services are available ubiquitously within the company, and can be accessed anywhere, allowing employees to retrieve information through mobile devices. The company has the necessary skills in most of the relevant areas. **Digital Readiness Level 5:** A company that has already implemented its Industry 4.0 strategy and continuously monitors its implementation. The company is fully digitised, both inside and beyond
4	Ryan, Fenton [52] *Recognising events 4.0: the digital maturity of events*	**Basic:** Elementary technology engagement, use of widespread digital technologies such as websites, email, mobile devices and social media to communicate.	**Emerging:** Technology assisted engagement, all in 'Basic' plus evidence of greater interaction with digital technologies both in the business and through individual communication **Developing:** Technology enriched engagement, all in 'Emerging' plus evidence that digital technology is important to the running of the business and individual communication	**Integrated:** Dedicated technology engagement, fully integrated systems, data-driven events, optimised communication, digitally managed
5	Wernicke, Stehn [35] *Introduction of a digital maturity assessment framework for construction site operations*	**Initial:** No, unspecific, or sporadic digital initiatives	**Digitisation:** Central IT led pilot projects **Digitalisation:** Project/site responsible for digital initiatives	**Digital transformation:** Long-term development in project portfolio

Source: Perera et al. 2023

Figure 12: Maturity table part 2

Table 1 (*continued*)

No.	Source	Early stage characteristics	Transitioning stage characteristics	Mature stage characteristics
6	Valdez-de-Leon [30] *A Digital Maturity Model for Telecommunications Service Providers*	**Not started:** The organisation has not taken any steps to transform **Initiating:** The organisation has decided to move toward a digital business and is taking initial steps in that direction.	**Enabling:** The organisation is implementing initiatives within the dimension that will form the foundation of its digital business. **Integrating:** The organisation's initiatives are being integrated across the organization to support end-to-end capabilities.	**Optimising:** The organisation's digital initiatives within the dimension are being fine-tuned and used to further increase overall performance. **Pioneering:** The organization is breaking new ground and advancing the state of the practice within the dimension.
7	von Solms and Langerman [31] *Digital technology adoption in a bank Treasury and performing a Digital Maturity Assessment*	**None (Stage 1):** No digital awareness, idea or plan nor presence of digital data within the area (e.g., everything is paper based). **Beginner (Stage 2):** Low understanding of how digital technology can transform the business, still building internal support and/or developing a business case.	**Intermediate (Stage 3):** Exploring the application of new technologies and starting to digitalise elements of the business. **Advanced (Stage 4):** Optimising middle-office and back-office processes via new technologies as part of a coherent digital investment plan.	**Expert (Stage 5):** Integrated front-office, middle office and back-office operations and supported by data that flows across functions and geographies.
8	Kljajić Borštnar and Pucihar [28] *Multi-attribute model for assessment of the digital maturity of an Small and Medium Enterprise*	**Lagging behind:** Digital capability and organisational capability are nil. **Initial:** Planning is limited for digital capability while organisation capability is slowly changing. Can also be the case where there is full digital capability but the organisation is not ready.	**Advanced:** One option is when the digital capability planning is limited while organisation is continuously changing. The other option is when there is full digital capability coupled with organisation planning the change.	**Digital winner:** When there is full digital capability and slowly changing level of organisational capability.
9	Eadie, Perera [39] *Key process area mapping in the production of an e-capability maturity model for UK construction organisations*	**Maturity level 1 and 2:** Quality management system, cost management system, time management system, operational analysis	**Maturity level 3:** Intergroup coordination, integrated teaming, requirements development, integration management system, organisational environment **Maturity level 4:** Organisational change management system, knowledge management system	**Maturity level 5:** Governance management system
10	Shahiduzzaman, Kowalkiewicz [53] *Digital Business - Towards a Value Centric Maturity Model*	**Initiate:** Organisations are confused on digital relevance, digital direction and the need for innovation; show a low level of digital literacy; are not using customer data and have no digital R&D.	**Competent:** Organisations are technology focused, and usually have siloed areas of expertise; show a low level of innovative culture; are not reimagining their offering. **Purposeful:** Organisations show high returns on investment but weak in terms of (internal) digital development capability; have digitally reimagined products and services; are customer focused.	**Transformative:** Organisations have strong internal digital development capability; are problem focused; have a culture of innovation.
11	Geissbauer, Vedso [23] *Building the digital enterprise model*	**Digital Novice:** First digital solutions and isolated applications, digitised and automated sub-processes. Partial, integration including, production or with internal and external partners, standard processes for collaboration partly in place.	**Vertical integrator:** Vertical digitisation and standardised and harmonised internal processes and data flows within the company; limited integration with external partners. **Horizontal integrator:** Horizontal integration of processes and data flows with customers and external partners, intensive data use through full integration across the network.	**Digital champion:** Fully digitised, integrated partner ecosystem with, self-optimised, virtualised processes, focus on core competency; decentralised autonomy. Near real-time access to extended set of operative information.
12	Westerman, Calméjane [27] *Digital transformation roadmap for billion-dollar organisations*	**Beginners:** Management sceptical of the business value of advanced digital technologies, may carry out some experimentation, immature digital culture	**Conservative** organisations have overarching digital vision exists, but may be underdeveloped, few advanced digital features, though traditional digital capabilities many be mature, strong digital governance across silos, taking active steps to build digital skills and culture **Fashionistas** have many advanced digital features (such as social, mobile) in silos, no overarching vision, underdeveloped coordination, digital culture may exist in silos	**Digirati:** Strong overarching digital vision, good governance, many digital initiatives generating business value in measurable ways, strong Digital culture
13	McKinsey Digital [24] *Raising your Digital Quotient Model*	**Foundations:** Cross-functionality, flat hierarchies, digital talent and agility	**Core:** Automation of back-end processes, outsourcing of support functions, automated analytics and intelligence, end-to-end digitalisation	**New Frontiers:** Smart grids, digital logistics, autonomous vehicles, Industry 4.0
14	Radford, Macdonald [36] *UK Infrastructure Industry Digital transformation benchmark in collaboration with the Institution of Civil Engineers*	**Traditional:** Leaders have limited understanding of digital transformation, do not see relevance to their business. No overarching digital strategy exists; work may be under way to develop it. Disconnected digital plans may be in place for specific aspects. Perception that digital doesn't apply to individual's role, function or business - it is an IT function. Belief that	**Simple Collaboration:** Commitment to digital transformation at the highest level of key partners, belief it is fundamental to business success. Informal champions exist across multiple functions. Digital strategy sponsored by senior leaders. Digital plans exist for different owner functions and partners. **Integrated functions and relationships:** Strong digital leadership, with change	**Interconnected Industry:** Leaders recognise value of greater alignment with other owners and sectors. Partnering with peers and competitors becomes core business activity. Digital capability of interfacing organisations of utmost importance in assessing impacts on their own organisation and society.

Source: Perera et al. 2023

Figure 13: Maturity table part 3

Table 1 (*continued*)

No.	Source	Early stage characteristics	Transitioning stage characteristics	Mature stage characteristics
		digital transformation is incidental, focused on technology.	agents across all levels and functions of owner and partners, empowered to drive change. Comprehensive digital strategy addresses all aspects of transformation, at multiple levels, closely aligned to corporate strategy. Digital planning is coherent across different functions of the owner and partners. **High performing enterprise:** Joined-up leadership across the enterprise drives digital transformation in an integrated manner. Leaders engage and create a platform for everyone to drive change. Full digital change programme has been implemented across the enterprise, embedded in everything people do. Digital articulated as part of organisational values.	
15	Deloitte Digital [25] *Deloitte's Digital Maturity Model*	**Imagine:** At this stage organisation develop and align on their digital direction including brand, growth, customer experience and product strategy.	**Deliver:** At this stage organisations redefine core business capabilities and processes to optimise for digital, drive change in the DNA of the business, including evolving the organisational design.	**Run:** At this stage organisation deliver data protection, ID and asset management forensics solutions. Support deployment of organisation change and platforms to drive value realisation and sustained business agility.
16	Gill and VanBoskirk [26] *Forrester's Digital Maturity Model 4.0*	**Skeptics:** Just beginning the digital journey.	**Adopters and Collaborators:** Investing in skills and infrastructure, breaking down traditional silos.	**Differentiators:** Leveraging data to drive customer obsession.
17	Schuh, Anderl [54] *Acatech Industrie 4.0 Maturity Index*	**Computerization:** Use of information technologies for the processing as well as the documentation of planning, organizational and operative tasks. Data and information are stored centrally and are available for analysis. **Connectivity:** Various resources and processes are linked via interfaces. Isolated recording and processing of data and information only takes place in exceptional cases.	**Visibility:** The attainment of information and decision transparency in operational processes. All actions within the company are fully documented and can be observed in real time. **Transparency:** A comprehensive expert system.	**Predictability:** Transforms this expert knowledge into forecasts. The robustness and speed of the decision processes continues to increase. **Adaptability:** Action alternatives are not only automatically generated, but also automatically evaluated and finally the one that appears most suitable is implemented.
18	Australian Government [55] *Australian Industry Report 2016 from the Office of the Chief Economist*	**Stage 1:** Using basic technologies to improve business operations. Examples: internet, connection, website and email.	**Stage 2:** Using advanced technologies to improve business operations. Examples: cloud computing, social media, e-commerce, Internet of Things (IoT) and big data analytics. **Stage 3:** Integrated use of digital technologies to transform business operations. Examples: online platforms and automated supply chain management.	**Stage 4:** Digital technologies and management capability enabling business transformation Examples: digital assets, create new business models.
19	Australian Government [56] *Digital Economy Strategy 2030*	**Building the foundations to grow the digital economy:** Includes investing in digital infrastructure, a skilled workforce, digital inclusion, digital trade agreements, cyber security and safety, and world-class systems and regulation that encourage the adoption and creation of trusted digital technology.	**Building capability in emerging technologies:** Recognising the important role of emerging technologies in driving future productivity and prosperity; developing an understanding of these technologies to build capability and keep pace with changes in technology.	**Setting Digital Growth Priorities:** Lifting the digital capability of small to medium enterprises (SMEs); supporting modern and globally competitive industry sectors in areas like manufacturing, agriculture, mining and construction; building a dynamic and emerging technology sector; and delivering simple and secure digital government services.
20	Victorian Government [57] *Information Technology Strategy*	**Information and data reform:** Open information and data; holistic management of information; systemic approach to government data sharing. **Digital opportunity:** Digital services, mobile delivery, digital engagement with citizens.	**Technology reform:** Modern staff productivity systems, sharing corporate systems, shared technology services, cloud-based systems, improved security.	**Capability uplift:** Strengthening ICT project delivery and probity, strengthening ICT procurement, transform willingness to engage, increased awareness of contemporary technology approaches.
21	New Zealand Government [58] *Result10 Blueprint - A strategy for digital public services*	**Digital by Choice:** An uptake of digital transactions by improving access, provision, awareness and trust and confidence, and in some cases providing other incentives.	**The Service Vision / Digital by Design:** Services designed for digital: seamless, smart and secure. The approach is to optimise the role of digital channels in service delivery.	**The System Vision / Digital by Default:** Integrated digital service delivery. Working in new ways. Customers at the centre of service design and delivery, government connected and collaborative, along with a culture of digital innovation.
22	Government of South Australia [59] *2016 South Australian Government digital landscape report*	**Citizen requirements and engagement:** Improved online services and accuracy of information, sharing personal information between agencies with security of data, online/real time assistance via chat services.	**Facilitating the development of digital services:** Effectively support agencies in delivering digital services, central government to act as a facilitator, strategic guide or consultant to agencies on all matters digital.	**Collaboration across agencies and with industry:** Expand the level of collaboration across agencies, increase the level of data and technical expertise sharing across agencies, leverage industry partnerships to deliver outcomes.

Source: Perera et al. 2023

B Interviews

B.1 Interview 1

In an engaging discussion, the participant delves into their understanding of the future-readiness concept, questioning the distinction between adapting and innovating. The researcher provides clarification, explaining that innovation involves the creation of something new, while adaptation centers around making changes in response to market demands. The conversation emphasizes the importance of willingness and pro-activeness in driving innovation, as well as the need for organizations to strike a balance between exploiting existing operations and exploring new opportunities.

The participant raises a compelling point regarding the necessity of understanding customers on a deeper level, surpassing the limitations of simple survey data when exploring and actively responding to a dynamic market. The researcher acknowledges this perspective, stressing the significance of actively pursuing innovation rather than merely possessing the capacity for it. They further discuss the distinction between innovation itself and the willingness to innovate, underscoring the strategic approach that organizations should adopt.

The participant expresses concerns about the potential fear of job loss associated with automation and its potential impact on people's willingness to embrace innovation. The researcher concurs, highlighting the crucial role of willingness and noting that some companies continue operating in familiar ways without actively pursuing innovation. Together, they agree on the distinction between willingness and the capacity for innovation.

Turning their attention to the concept of being future-ready, the participant suggests that it entails an organization's ability to adapt to a changing market. The researcher seeks clarification on this idea and encourages the participant to share their perspective. The participant emphasizes the significance of digitalization, becoming a digital leader, and investing in technologies. They shed light on the uncertainty brought about by emerging applications and the importance of aligning companies with the ongoing trend of digitalization.

To summarize, the conversation revolves around the concept of a future organization, highlighting the crucial role of willingness and pro-activeness in driving innovation.

It explores the differences between adaptation and innovation while stressing the need for organizations to actively pursue innovation to maintain competitiveness. The participant also raises points regarding the challenges and opportunities associated with digitalization and the notion of being future-ready.

Furthermore, the discussion between the researcher and participant delves into the importance of multidisciplinary teams and perspectives within organizations. The participant emphasizes the need to break down barriers and create an inclusive environment that welcomes diverse individuals with different backgrounds to contribute their unique viewpoints and ask critical questions. They propose that organizations should transition towards a multidisciplinary approach not only at the team level but also at the organizational level. To achieve this, they suggest creating hybrid roles that combine diverse expertise and perspectives, ultimately adding value to the company. The participant emphasizes the significance of continuous learning, adaptability, and curiosity in a rapidly changing world, underscoring the need for individuals to continuously acquire new knowledge and remain open to novel ideas. The researcher mentions their ongoing research focused on characterizing organizations based on future readiness and the development of an assessment model that measures skills and cultural aspects relevant to future readiness.

In conclusion, this scientific discussion encompasses a wide range of topics, including culture, digitalization, agility, and customer-centrality. It emphasizes the importance of considering these aspects in organizational strategies and transformations, promoting a culture of innovation and adaptability.

B.2 Interview 2

This interview is conducted with a senior consultant who specializes in organizational design and helping companies adapt to technology and data-driven environments. The interview focused on the concept of a Future-Ready Organization and explored various aspects related to adaptability, innovation, culture, and stability.

The participant expressed enthusiasm and approval regarding the definition of a Future-ready Organization, which emphasizes dynamic adaptation, innovation, value delivery, and proactive learning. They highlighted the importance of organizations being able to adapt to dynamic and turbulent environments and stressed the need for a stable backbone that enables acceleration. They suggested replacing the term "dynamic" with "flexible" in the definition and underscored the significance of organizational culture, core values, and maintaining stability while pursuing innovation.

The researcher acknowledged the importance of culture and expressed the intention to further investigate its influence on a company's ability to become future-ready. The challenge of measuring and assessing culture was discussed, along with its growing significance in the contemporary business landscape.

Key takeaways from the conversation include the need for Future-Ready Organizations to adapt to changing business environments, the crucial role of a stable backbone in accelerating innovation and value delivery, the significance of organizational culture and core values, and the importance of balancing stability and adaptability for long-term success. The researcher plans to explore the measurement and impact of culture on future readiness further.

The interview also touched upon additional topics related to future readiness, including the importance of innovation and adaptation in government agencies like the judiciary, sustainability concerns regarding organizations falling behind if they fail to innovate, cultivating a learning culture within organizations, talent management, customer-centrality and customer experience, data and technology, risk-taking and experimentation, and the role of reputation and branding in shaping customer perceptions and loyalty.

Overall, this interview provides valuable insights into the concept of a Future-ready Organization and highlights key factors that contribute to their success in dynamic and technology-driven environments.

B.3 Interview 3

This interview between the participant and the researcher seeks to find alignment between the literature and interview responses, while also identifying new characteristics of future-ready organizations. The participant suggests that adaptability and innovation go hand in hand, with innovation being a means to drive change and stay ahead in the market. The researcher is considering categorizing innovation as a sub-characteristic under adaptability to capture the relationship between the two, which the participant finds a suitable solution.

Overall, the interview explores the definition of a future-ready organization and discusses the researcher's aim to develop an assessment model to measure future readiness. The participant provides insights from their experience, emphasizing the importance of adaptability and innovation in navigating a rapidly changing market.

Additionally, the conversation touches upon several topics related to organizational collaboration, the impact of brand reputation on the company's future, risk-taking and innovation, and customer-centrality.

Collaboration within the organization is highlighted as crucial, involving multidisciplinary teams, effective communication, shared decision-making, and working together towards common goals. The conversation also delves into the relationship between brand reputation and company sustainability, emphasizing the significance of maintaining a positive reputation and aligning with societal values.

The importance of taking calculated risks and embracing innovation is discussed as a means to stay competitive and future-ready. The researcher emphasizes the need for organizations to balance risk-taking with established processes and the importance of being proactive in experimenting with new ideas.

A customer-centric approach is recognized as essential, with the researcher emphasizing the growing importance of putting the customer at the center of business strategies. The participant provides insights on considering the broader ecosystem and the significance of the customer journey and experience in building long-term relationships.

Furthermore, the conversation acknowledges the importance of data-driven decision-making and the ability to measure data within an organization. The participant mentions potential ethical considerations in data-driven decision-making, highlighting the need for a balance between human expertise and data-driven approaches.

The intersection of data, technology, and ethics is of interest to the researcher, particularly regarding reputation building and brand management.

Ethics and compliance are identified as integral components of being future-ready, as they influence how a company is perceived and trusted by stakeholders. The participant suggests that assessing an organization's ability to navigate regulations and adapt to legal changes could be a way to gauge its readiness for the future.

The potential impact of technological advancements on various industries is discussed, with examples such as the potential replacement of physical stores by digital solutions. The participant expresses interest in further exploring the topic of ethics in the context of decision-making, morality, and its implications for future readiness.

In summary, the conversation highlights the complex interplay between data, technology, ethics, and organizational readiness for the future. It emphasizes the importance of adaptability, innovation, collaboration, brand reputation, customer-centrality, and ethical considerations in building a future-ready organization. The researcher's goal of developing an assessment model aligns with these insights to measure and enhance future readiness.

B.4 Interview 4

This interview's participant is a business professional with an impressive 30 years of experience in IT, banking, and retail. As their background was the start of the interview, valuable insights and reflections on various aspects of the business world emerged.

Adaptability and agility were among the first topics we explored. The participant emphasized the importance of these qualities, highlighting that they must be accompanied by a clear strategic direction. Without a solid plan guiding adaptation efforts, businesses risk wandering aimlessly in the face of ever-changing markets and customer demands.

After which a discussion about the relationship between agility and innovation started. The participant eloquently explained that the degree of innovation within an organization is intricately linked to its agility. Embracing new ideas and approaches allows businesses to stay ahead of the curve and respond effectively to emerging trends.

A key theme that emerged from our conversation was the significance of learning organizations and their employees. The participant passionately stated that they form the foundation for success in any industry. They emphasized the importance of nurturing and developing talent, noting that talent management should primarily focus on the employer's perspective, encouraging employees to reach their full potential.

However, the participant also recognized that not everyone possesses the agile thinking required for adaptability. They expressed the need for businesses to identify and nurture employees with a different spirit, individuals who thrive in dynamic and fast-paced environments.

Our conversation then shifted towards leadership and collaboration. The participant highlighted the importance of leaders adapting to new requirements and fostering a culture that promotes agility and collaboration. They drew inspiration from the movement in Germany, where companies actively assisted their suppliers to improve, fostering a sense of partnership and mutual growth.

When discussing branding, the participant stressed its significance in today's business landscape. They observed that newer brands often exhibit more innovation, while startups have an opportunity to build their reputation from scratch. With

a well-crafted product plan and a dedication to excellence, these businesses can establish a strong reputation and brand identity.

Risk management also emerged as a critical factor. The participant emphasized that companies must be aware of the level of risk they are willing to take. While greater risks can lead to better revenue and market gains, finding the right balance is crucial for long-term success.

Customer-centrality, according to the participant, is more important now than ever before. They stressed that businesses must prioritize understanding and meeting customer requirements while ensuring timely product delivery. Failing to focus on the customer can result in missed opportunities and losing ground to competitors.

Lastly, the impact of digitalization across different areas of a company was discussed. The participant highlighted the need to measure the degree of technological integration, examining how much of the business processes are supported or handled by technology compared to manual labor. This measurement provides valuable insights into the company's digitalization progress and areas for improvement. As the interview drew to a close, the participant expressed their enthusiasm for the outcome of this research.

B.5 Interview 5

In this interview, with a senior management consultant who specializes in business strategies, the topic of essential characteristics and strategies required for thriving in today's and the future's dynamic organizational environment was discussed. Their expertise in guiding organizations towards future readiness provided valuable insights into the essential qualities and strategies required for thriving in an ever-changing business landscape.

According to the participant, a future-ready organization is one that exhibits the ability to dynamically adapt to a constantly evolving business environment while delivering value to stakeholders. In essence, it is an entity that embraces change, finding a delicate equilibrium between stability and innovation, and proactively responds to emerging challenges. They emphasized the importance of recognizing the inter-dependencies and connections within the ecosystem in which each organization exists.

The participant underscored adaptability as the core characteristic of a future-ready organization. Rather than solely focusing on being the first to introduce innovations, organizations should prioritize their ability to respond and change effectively, meeting the evolving needs of both their end customers and the broader industry. While innovation remains a vital component, being future-ready entails preparedness rather than necessarily being the primary innovator.

To be future-ready, a deep comprehension of market and industry dynamics is crucial. The participant stressed the significance of constant monitoring and anticipation of shifts in customer needs and broader industry changes. By considering the evolving expectations of end customers and aligning their strategies accordingly, organizations can navigate the dynamic market and industry landscape more effectively.

In conclusion, this enlightening interview shed light on the importance of adaptability, value delivery, and innovation in building a future-ready organization. By understanding the dynamics of the market and industry and responding to the ever-changing needs of end customers, organizations can position themselves for success amidst an uncertain future.

C Multiple-case study

C.1 Case A

Figure 14: Maturity assessment list Case A

		M1		M2		M3		M4
Adaptability								
0,2	Adaptive capability	No capacity available to adapt the organization		Limited resources available for adapting the organization		Resources for adapting the organization are available	x	Resources are reserved for adapting the organization
0,4	Operational backbone	Operational backbone is not fully developed yet		Operational backbone functions well but are not fully efficient	x	Strong operational backbone that is efficient		Operational backbone can be exploited and relied on to run the core
0,2	Innovation	No incentives towards innovation throughout the organization		Some innovation initiatives are implemented	x	Organization is looking to innovate on multiple levels		Innovation is a core process within the organization
0,2	Agility	Transforming (parts of) the organization is slow		Transforming (parts of) the organization is moderately slow	x	Transforming (parts of) the organization is moderately fast		Transforming (parts of) the organization is fast and efficient
Digitalization								
0,4	Data	No idea or plan on how to use data		Starting to use data to understand the organizationand ecosystem	x	Data is used to analyze and support business processes		Data is used for predicting future trends and opportunities
0,6	Technology	Technology only supports a few business processes		Technology supports most of the business processes	x	Optimising business processes via new technologies		Integrated technology into the business processes.
Culture								
0,2	Continuous learning	No intrinsic motivation to develop skills upto industry standards		Low motivation to develop their skills upto industry standards		High motivation to keep developing their skills upto industry standards	x	Eager to learn and develop personal skills above industry standards
0,2	Talent management	No incentives in place towards developing their workforce		A few incentives are in place to develop the workforce, but not encouraged	x	A few incentives are in place and encouraged to develop the workforce		Many incentives throughout the organization to develop the workforce are in place and used
0,6	Collaboration	Departments and people are not collaborating		Starting collaboration by creating some formats that enhance it	x	Intergroup coordination, integrated teams		Multi-disciplinary teams that collaborate throughout the organizationon all levels
Strategy								
0,5	Risk management	Risk averse throughout the org, last in the pack to change		Still risk averse, but changes along with the majority		Becoming more of a risk seeker, not afraid anymore	x	Excited to try new incentives and confident to take on risks
0,5	Digital strategy	No digital strategy in place, just focused on business		More strategies in place to align the business	x	Organizational strategies are aligned to support business		Digital strategy is in place and digital is a core part of all other strategies as well

C.2 Case B

Figure 15: Maturity assessment list Case B

		M1		M2		M3		M4	
Adaptability									
	Adaptive capability	No capacity available to adapt the organization		Limited resources available for adapting the organization	x	Resources for adapting the organization are available		Resources are reserved for adapting the organization	
	Operational backbone	Operational backbone is not fully developed yet	x	Operational backbone functions well but are not fully efficient		Strong operational backbone that is efficient		Operational backbone can be exploited and relied on to run the core	
	Innovation	No incentives towards innovation throughout the organization		Some innovation initiatives are implemented	x	Organization is looking to innovate on multiple levels		Innovation is a core process within the organization	
	Agility	Transforming (parts of) the organization is slow	x	Transforming (parts of) the organization is moderately slow		Transforming (parts of) the organization is moderately fast		Transforming (parts of) the organization is fast and efficient	
Digitalization									
	Data	No idea or plan on how to use data	x	Starting to use data to understand the organizationand ecosystem		Data is used to analyze and support business processes		Data is used for predicting future trends and opportunities	
	Technology	Technology only supports a few business processes		Technology supports most of the business processes	x	Optimising business processes via new technologies		Integrated technology into the business processes.	
Culture									
	Continuous learning	No intrinsic motivation to develop skills upto industry standards		Low motivation to develop their skills upto industry standards		High motivation to keep developing their skills upto industry standards		Eager to learn and develop personal skills above industry standards	
	Talent management	No incentives in place towards developing their workforce		A few incentives are in place to develop the workforce, but not encouraged		A few incentives are in place and encouraged to develop the workforce	x	Many incentives throughout the organization to develop the workforce are in place and used	
	Collaboration	Departments and people are not collaborating	x	Starting collaboration by creating some formats that enhance it		Intergroup coordination, integrated teams		Multi-disciplinary teams that collaborate throughout the organizationon all levels	
Strategy									
	Risk management	Risk averse throughout the org, last in the pack to change		Still risk averse, but changes along with the majority	x	Becoming more of a risk seeker, not afraid anymore		Excited to try new incentives and confident to take on risks	
	Digital strategy	No digital strategy in place, just focused on business		More strategies in place to align the business		Organizational strategies are aligned to support business	x	Digital strategy is in place and digital is a core part of all other strategies as well	

C.3 Case C

Figure 16: Maturity assessment list Case C

		M1		M2		M3		M4	
Adaptability									
0,2	Adaptive capability	No capacity available to adapt the organization		Limited resources available for adapting the organization	x	Resources for adapting the organization are available		Resources are reserved for adapting the organization	
0,2	Operational backbone	Operational backbone is not fully developed yet	x	Operational backbone functions well but are not fully efficient		Strong operational backbone that is efficient		Operational backbone can be exploited and relied on to run the core	
0,2	Innovation	No incentives towards innovation throughout the organization		Some innovation initiatives are implemented		Organization is looking to innovate on multiple levels	x	Innovation is a core process within the organization	
0,3	Agility	Transforming (parts of) the organization is slow	x	Transforming (parts of) the organization is moderately slow		Transforming (parts of) the organization is moderately fast		Transforming (parts of) the organization is fast and efficient	
Digitalization									
0,4	Data	No idea or plan on how to use data		Starting to use data to understand the organizationand ecosystem		Data is used to analyze and support business processes	x	Data is used for predicting future trends and opportunities	
0,6	Technology	Technology only supports a few business processes		Technology supports most of the business processes	x	Optimising business processes via new technologies		Integrated technology into the business processes.	
Culture									
0,25	Continuous learning	No intrinsic motivation to develop skills upto industry standards		Low motivation to develop their skills upto industry standards	x	High motivation to keep developing their skills upto industry standards		Eager to learn and develop personal skills above industry standards	
0,25	Talent management	No incentives in place towards developing their workforce		A few incentives are in place to develop the workforce, but not encouraged		A few incentives are in place and encouraged to develop the workforce	x	Many incentives throughout the organization to develop the workforce are in place and used	
0,5	Collaboration	Departments and people are not collaborating	x	Starting collaboration by creating some formats that enhance it		Intergroup coordination, integrated teams		Multi-disciplinary teams that collaborate throughout the organizationon all levels	
Strategy									
0,4	Risk management	Risk averse throughout the org, last in the pack to change		Still risk averse, but changes along with the majority		Becoming more of a risk seeker, not afraid anymore	x	Excited to try new incentives and confident to take on risks	
0,6	Digital strategy	No digital strategy in place, just focused on business		More strategies in place to align the business		Organizational strategies are aligned to support business	x	Digital strategy is in place and digital is a core part of all other strategies as well	

C.4 Case D

Figure 17: Maturity assessment list Case D

		M1		M2		M3		M4	
Adaptability									
0,4	Adaptive capability	No capacity available to adapt the organization		Limited resources available for adapting the organization	x	Resources for adapting the organization are available		Resources are reserved for adapting the organization	
0,4	Operational backbone	Operational backbone is not fully developed yet		Operational backbone functions well but are not fully efficient		Strong operational backbone that is efficient	x	Operational backbone can be exploited and relied on to run the core	
0,1	Innovation	No incentives towards innovation throughout the organization		Some innovation initiatives are implemented		Organization is looking to innovate on multiple levels	x	Innovation is a core process within the organization	
0,1	Agility	Transforming (parts of) the organization is slow		Transforming (parts of) the organization is moderately slow	x	Transforming (parts of) the organization is moderately fast		Transforming (parts of) the organization is fast and efficient	
Digitalization									
0,5	Data	No idea or plan on how to use data		Starting to use data to understand the organizationand ecosystem	x	Data is used to analyze and support business processes		Data is used for predicting future trends and opportunities	
0,5	Technology	Technology only supports a few business processes		Technology supports most of the business processes	x	Optimising business processes via new technologies		Integrated technology into the business processes.	
Culture									
0,1	Continuous learning	No intrinsic motivation to develop skills upto industry standards		Low motivation to develop their skills upto industry standards		High motivation to keep developing their skills upto industry standards	x	Eager to learn and develop personal skills above industry standards	
0,4	Talent management	No incentives in place towards developing their workforce		A few incentives are in place to develop the workforce, but not encouraged		A few incentives are in place and encouraged to develop the workforce	x	Many incentives throughout the organization to develop the workforce are in place and used	
0,5	Collaboration	Departments and people are not collaborating		Starting collaboration by creating some formats that enhance it		Intergroup coordination, integrated teams	x	Multi-disciplinary teams that collaborate throughout the organizationon all levels	
Strategy									
0,5	Risk management	Risk averse throughout the org, last in the pack to change		Still risk averse, but changes along with the majority		Becoming more of a risk seeker, not afraid anymore	x	Excited to try new incentives and confident to take on risks	
0,5	Digital strategy	No digital strategy in place, just focused on business		More strategies in place to align the business	x	Organizational strategies are aligned to support business		Digital strategy is in place and digital is a core part of all other strategies as well	

C.5 Case E

Figure 18: Maturity assessment list Case E

		M1		M2		M3		M4	
Adaptability									
0,2	Adaptive capability	No capacity available to adapt the organization		Limited resources available for adapting the organization		Resources for adapting the organization are available	x	Resources are reserved for adapting the organization	
0,5	Operational backbone	Operational backbone is not fully developed yet		Operational backbone functions well but are not fully efficient		Strong operational backbone that is efficient	x	Operational backbone can be exploited and relied on to run the core	
0,1	Innovation	No incentives towards innovation throughout the organization		Some innovation initiatives are implemented		Organization is looking to innovate on multiple levels	x	Innovation is a core process within the organization	
0,2	Agility	Transforming (parts of) the organization is slow		Transforming (parts of) the organization is moderately slow	x	Transforming (parts of) the organization is moderately fast		Transforming (parts of) the organization is fast and efficient	
Digitalization									
0,5	Data	No idea or plan on how to use data		Starting to use data to understand the organization and ecosystem		Data is used to analyze and support business processes		Data is used for predicting future trends and opportunities	x
0,5	Technology	Technology only supports a few business processes		Technology supports most of the business processes		Optimising business processes via new technologies		Integrated technology into the business processes.	x
Culture									
0,2	Continuous learning	No intrinsic motivation to develop skills upto industry standards		Low motivation to develop their skills upto industry standards		High motivation to keep developing their skills upto industry standards	x	Eager to learn and develop personal skills above industry standards	
0,2	Talent management	No incentives in place towards developing their workforce		A few incentives are in place to develop the workforce, but not encouraged		A few incentives are in place and encouraged to develop the workforce	x	Many incentives throughout the organization to develop the workforce are in place and used	
0,6	Collaboration	Departments and people are not collaborating		Starting collaboration by creating some formats that enhance it	x	Intergroup coordination, integrated teams		Multi-disciplinary teams that collaborate throughout the organizationon all levels	
Strategy									
0,4	Risk management	Risk averse throughout the org, last in the pack to change		Still risk averse, but changes along with the majority	x	Becoming more of a risk seeker, not afraid anymore		Excited to try new incentives and confident to take on risks	
0,6	Digital strategy	No digital strategy in place, just focused on business		More strategies in place to align the business	x	Organizational strategies are aligned to support business		Digital strategy is in place and digital is a core part of all other strategies as well	

D Final future-ready maturity list

Figure 19: Final future-ready maturity assessment list

		M1	M2	M3	M4
Adaptability					
	Change capabilities	The resources in the run-change budget are divided as 90%-10%	The resources in the run-change budget are divided as 80%-20%	The resources in the run-change budget are divided as 70%-30%	The resources in the run-change budget are divided as 60%-40%
	Operational backbone	Operational backbone is not fully developed yet	Operational backbone functions well but are not fully efficient	Strong operational backbone that is efficient	Operational backbone can be exploited and relied on to run the core
	Innovation	No incentives towards innovation throughout the organization	Some innovation initiatives are implemented	Organization is looking to innovate on multiple levels	Innovation is a core process within the organization
	Agility	Transforming (parts of) the organization is difficult	Transforming (parts of) the organization is moderately hard	Transforming (parts of) the organization is moderately easy	Transforming (parts of) the organization is easy and efficient
Digitalization					
	Data	No idea or plan on how to use data	Data is used to analyze and support business processes	Starting to use data to understand the organization and ecosystem	Data is used for predicting future trends and opportunities
	Technology	Technology only supports a few business processes	Technology supports most of the business processes	Optimising business processes via new technologies	Integrated technology into the business processes.
Culture					
	Intrinsic motivation	No intrinsic motivation to develop skills upto industry standards	Low motivation to develop their skills upto industry standards	High motivation to keep developing their skills upto industry standards	Eager to learn and develop personal skills above industry standards
	Extrinsic motivation	No incentives in place towards developing their workforce	A few incentives are in place to develop the workforce, but not encouraged	A few incentives are in place and encouraged to develop the workforce	Many incentives throughout the organization to develop the workforce are in place and used
	Collaboration	Departments and people are not collaborating	Starting collaboration by creating some formats that enhance it	Intergroup coordination, integrated teams	Multi-disciplinary teams that collaborate throughout the organizationon all levels
Strategy					
	Risk management	Risk averse throughout the org, last in the pack to change	Still risk averse, but changes along with the majority	Becoming more of a risk seeker, not afraid anymore	Excited to try new incentives and confident to take on risks
	Digital strategy	No digital strategy in place, just focused on business	More strategies in place to align the business	Organizational strategies are aligned to support business	Digital strategy is in place and digital is a core part of all other strategies as well