Data Governance Challenges at Dutch Financial Services Firms

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Acknowledgements

This thesis signifies the end of my time as a Management of Technology (MOT) student at the Delft University of Technology. During this degree I learned how to explore and understand technology as a corporate resource. This culminates in this thesis about the implementation of data governance at financial services firms. The thesis research used scientific methods to look into managing knowledge and innovation processes to improve understanding of the implementation of data governance in a corporate setting, signifying the relevance of this thesis to the MOT program. The abundance of course material related to innovation, such as in the course Technology, Strategy & Entrepreneurship (MOT1435), set me up perfectly to complete this thesis.

Over the course of writing my Master thesis I have received a great deal of support. Therefore I would like to take a moment to show my gratitude.

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Friso Koeleman
Delft, December 2023

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Executive Summary

In 2006 already, Clive Humby said: *"Data is the New Oil!"* and like oil, data needs "infrastructure" to be gathered, analyzed and used. This infrastructure is called data governance and it is essential in today's data-driven era to ensure availability, quality and security of an organization's data. This is especially true for financial services firms, which deal with massive amounts of highly-sensitive personal data, such as names, dates of birth and bank details, and operate in a highly regulated environment. Therefore, it is essential that any new data governance policies, such as a transition to a cloud-based data governance policy, are implemented as quickly and efficiently as possible. Research thus far has primarily focused on the importance of data governance and developing data governance models. However, the implementation of data governance proves to be not without its barriers. Some research has been done into what barriers organizations encounter when attempting to implement new data governance policies, but strategies to deal with these barriers have not been found in existing literature. Therefore, this research seeks to answer the question:

"**How do managers at financial services firms in the Netherlands deal with the barriers to successfully implement new data governance?**"

This thesis used a literature study, twelve individual interviews with PwC employees who were heavily involved in data governance implementation processes at financial services firms in the Netherlands and a focus group interview with experts from PwC to determine what barriers financial services firms face when they are implementing new data governance, which strategies they use to deal with these barriers and what key factors influence the decision-making in this implementation process. These three elements were then used to find the answer to how managers at financial services firms in the Netherlands successfully implement new data governance.

The research attempts to close the gap in the literature surrounding the general strategies that are used to navigate the barriers that inhibit (new) data governance implementation. Furthermore, it can help further identify which barriers (financial services) firms face when attempting to implement new data governance and aid in the development of more effective data governance framework. Additionally, the improved understanding of how financial services firms navigate the barriers that inhibit data governance implementation can help maintain trust in financial services firms and the financial system as a whole and it can aid in the development of more effective regulatory frameworks to increase how fast financial services firms are able to comply to them.

The barriers financial firms face to implementing data governance that were found in this thesis were sorted into four broad categories: "Organizational culture/structure", "Senior management priority", "IT performance" and "Lack of information". Examples of these barriers are: a "restrictive mindset", "unfocused strategy", "incompatible IT systems" or a "lack of information on technol-

ogy". The strategies the firms used to deal with these barriers were also sorted into four different categories: "Senior management vision/championing", "Technological tools/skills", "Stakeholder involvement/consensus" and the "Business case" strategy. Examples of these strategies are: "developing a global vision", "standardization of technology", "stakeholder involvement" and "building a broad business case". A complete overview of the barriers and their corresponding strategies that were found in this thesis can be found in figure 4.1.

It was found that both the barriers financial services firms face to implementing data governance as well as the strategies they use to deal with those barriers are very similar to the barriers and strategies involved with implementation of innovation. Furthermore, some of the strategies that were mentioned in the individual interviews, were previously unknown to some participants of the focus group and thus provided them with an immediate point of action. The focus group also recommended the development of a data governance maturity model that would help provide a quick scan of the state of data governance implementation in an organization and a list of what would need to happen to complete the implementation. Thus creating a more holistic approach to the implementation of data governance. Additionally, based on this research, there were three strategies that are believed to be more important than the other strategies found in this research. Those were involving all the stakeholders in the process, finding an appropriate sponsor and/or champion and developing a broad business case. Combining these three strategies with the aforementioned holistic approach will allow firms to navigate the barriers involved with data governance implementation. It is recommended that future research replicates this study from the perspective of internal financial services firms employees, to be able to compare and contrast the internal and external perspective. Another recommendation is that future research investigates the temporal dependencies of the data governance implementation process by analyzing an ongoing process from start to finish to be able to obtain a better understanding of the entire process.

Contents

Chapter 1

Introduction

"The world's most valuable resource is no longer oil, but data" was the headline of a 2017 article in The Economist which illustrated the transformative power of data in the 21st century (The Economist (2017)). As we witness data surpassing oil in significance, the need to safeguard, govern, and derive value from this invaluable asset becomes increasingly apparent. This had already been predicted by British mathematician Clive Humby in his 2006 talk aptly titled:"Data is the New Oil!" (Humby (2006)). However, Humby did not only predict data to become more valuable than oil, he also compared data to oil in a different fashion. In the same way that oils needs drilling installations, pipelines and refineries to become usable, data also needs certain "infrastructure" to be gathered, analyzed and used. Furthermore, like oil, data leaks can be massive risks to a company and lead to huge damages, for example when all three billion Yahoo accounts were hacked in 2013, decreasing the company's value by $350 million (Stempel and Finkle (2017)).

Unlike oil however, data is not a finite resource, it is reusable and above all the amount of data is increasing rapidly. Between 2010 and 2020 annual data production increased thirty-twofold and is projected to increase even further (Taylor (2021)). Even though not all of this data is stored, it is evident that strong guidelines need to be in place to manage an organization's data to ensure its quality amidst an ever increasing ocean of data. Furthermore, these guidelines should also ensure that reusable data does not disappear in the aforementioned ocean. In response to the growing importance of data, the European Union has set up regulations to ensure the data protection of its citizens through the General Data Protection Regulation (GDPR). This regulation applies to anyone or any organization that collects and processes personal data of EU citizens, wherever they are based or wherever the data is stored (Tankard (2016)). The breach of this regulations could lead to fines up to 4% of the worldwide turnover of an enterprise (Albrecht (2016)). However, compliance to this regulation proves to be not without its difficulties evidenced by many multi-million euro fines with a 1.2 billion euro fine for Facebook's and Instagram's parent company Meta taking the crown (European Data Protection Board (2023)).

The set of standards and policies an organization can put in place to ensure the quality and security of their data is called their *Data Governance* policy. The purpose of this data governance is to increase the value of data and minimize data-related costs and risks (Abraham, Schneider, and vom Brocke (2019)). This is done by setting up a framework of decision rights and accountabilities, formalizing data policies, standards and procedures, monitoring compliance and data quality and thereby enabling the organization to manage data as a strategic asset (Abraham et al. (2019)). According

to Stulp, Demneri, and Munnik (2023), when well-implemented and embedded data governance is effective it will result in proper management of the availability, usability, integrity, quality and security of data within the organization. It will also improve regulatory compliance, create consistent data definitions, solve data analytics and reporting issues and reduce costs (Stulp et al. (2023)).

1.1 Problem Statement

The increasing importance of data in the financial services sector (i.e. banks, insurance companies, pension providers etc.), combined with the generally low quality of financial data (Andriosopoulos, Doumpos, Pardalos, and Zopounidis (2019)) and the fact that financial services firms deal with sensitive personal data (e.g. names, addresses, dates of birth, bank details) signify the relevance of data governance within the financial services sector. Without appropriate data governance, financial services firms will lose the public's trust to carefully handle their personal data which will in turn destabilize the global financial system since that is based on people's trust in banks, hence the term "fiduciary money". Furthermore, data quality and security requirements in the financial services sector are being driven by continuous tightening of regulatory and compliance standards (Orgeldinger (2018)). Aside from the aforementioned GDPR, already in 2013 the Basel Committee on Banking Supervision (2013) published the "Principles for effective risk data aggregation and risk reporting" (BCBS 239) which requires global systemically important banks (G-SIBs) (i.e. banks whose failure might lead to a financial crisis) to have a strong data governance and infrastructure for their risk management data. This was set up to give banks guidelines to help increase their financial stability, and thus the stability of the global financial system as a whole, through robust risk data management (Basel Committee on Banking Supervision (2013); Orgeldinger (2018)).

The progress report on compliance to BCBS 239 by the Basel Committee on Banking Supervision (2020) found that in the five years since BCBS 239 was published, none of the banks were fully compliant with their data governance policies. Additionally, according to Runte and Kamps (2023) there has been a significant increase in the number of fines for GDPR violations in the financial services sector. Clearly, there are barriers to the implementation of data governance at financial services firms. This is reinforced by Al-Ruithe and Benkhelifa (2017), who found several barriers to the implementation of new data governance policies. New data governance policies are a change to current policy, for example when a firm switches to cloud computing or when there are regulatory changes such as BCBS 239. Examples of these barriers are a lack of support from executives and stakeholders, a lack of focus on data governance within the organization and an unsupportive organizational culture (Al-Ruithe and Benkhelifa (2017)). Morabito (2015) also mentions several barriers to the implementation of data governance policies, e.g. incompatible systems and IT infrastructures, divergent and opposing priorities within an organization and getting all parties to agree on appropriate rules and policies. Ladley found similar barriers in unsupportive organizational structures (Ladley (2020a)) and legacy applications (Ladley (2020c)).

Research thus far has primarily focused on the importance of data governance and developing data governance models, in general (e.g. Khatri and Brown (2010), Weber, Otto, and Österle (2009) and Janssen, Brous, Estevez, Barbosa, and Janowski (2020)) and in the financial services industry in particular (e.g. Karkošková (2022)). In their literature review, Abraham et al. (2019) develop a data governance framework based on existing literature and use that framework to discuss the state of knowledge regarding data governance. They discuss the exact data governance mechanisms, the

scope of data governance, the antecedents and the consequences of data governance. Abraham et al. (2019) found that certain antecedents of data governance can act as barriers to the implementation and that many data governance approaches do not consider these barriers, which Abraham et al. deem as reductionist and unrealistic. They suggest that future research needs to analyze the impact of these barriers on the implementation of data governance. A similar suggestion is made by Al-Ruithe and Benkhelifa (2017), who recommend that future research develops a deeper understanding of the impact of the barriers they found on the implementation process and how these barriers can be overcome.

It is clear that the implementation of data governance policies at financial services firms suffers from barriers that inhibit it. This in turn inhibits the financial services firms, their clients and the financial system from enjoying the benefits of effective data governance. In order to enable and accelerate the implementation of data governance, one needs devise a strategy to address and navigate these barriers. The importance of these strategies is illustrated in Loewe and Dominiquini (2006), Meijer (2015) and Parris, Bouchet, Welty Peachey, and Arnold (2016). Parris et al. (2016) suggest several implementation steps that organizations are recommended to take to address the potential pitfalls and barriers to the implementation. Examples of these strategies are selecting an appropriate champion, demonstrating the return-on-investment (ROI) and providing appropriate training/education to better understand what they are trying to implement and the implementation process itself. However, the three aforementioned papers do not discuss data governance, but rather they consider the barriers to *innovation* and the strategies that are needed to overcome these barriers. So far, no research has been done into the strategies that are needed to overcome barriers to *data governance* implementation. Furthermore, Karkošková (2022), when developing a data governance model for a specific financial services firm, also found a lack of data governance implementation strategies, especially in financial services firms and therefore recommends future research studies the implementation methods of data governance at financial services firms. However, since Karkošková (2022) developed an approach for a specific financial services firm that had no existing data governance practices in place, this thesis is academically relevant as it attempts to close the gap in the literature surrounding the general strategies that are used to navigate the barriers that inhibit (new) data governance implementation.

1.2 Research Objective & Research Questions

If no strategies are applied to navigate the barriers that inhibit the successful implementation of data governance, (mandatory) data governance implementation is slowed down considerably or inhibited entirely, as exhibited by Basel Committee on Banking Supervision (2020). The implementation process then takes up massive amounts of time and resources of financial services firms that could have been spent on other urgent projects. Additionally, data governance implementation also strengthens the global financial system, as mentioned above, and thus this thesis has a considerable societal relevance. Identifying the strategies that financial services firms have used to successfully implement data governance can help optimize the implementation process so that it requires less resources and is completed faster. However, the definition of a successful implementation is not that simple since data governance is not a project but a continuously ongoing program (Karkošková (2022)). Does the success of the implementation depend on the success of the data governance itself or does it depend on the degree of success experienced by an outside party that was hired to consult on the implementation project? It is important to identify the success of an implementation project to be

able to determine how successful firms have tackled the barriers they faced. Therefore the goal of this research is to identify the barriers financial services firms face when implementing new data governance policies and the strategies they use to successfully implement data governance. Thus, the main research question of this thesis is:

How do managers at financial services firms in the Netherlands deal with barriers to successfully implement new data governance?

The following sub-questions were developed to help answer the main research question:

- *What does a successful implementation of data governance mean?*
- *What are the barriers that financial services firms in the Netherlands encounter when attempting to implement new data governance policies?*
- *What strategies do managers at financial services firms in the Netherlands employ to deal with barriers to data governance?*

This thesis contributes to the understanding of barriers that inhibit the implementation of data governance at financial services firms and the strategies that are used to address them. An improved understanding of how the strategies financial services firms employ to mitigate the barriers to data governance implementation influence the success of said implementation can help financial services firms with their implementation of new data governance in response to changing regulatory requirements, such as the aforementioned BCBS 239 (Basel Committee on Banking Supervision (2013)), Payment Service Directive (PSD) 2 (Dutch Central Bank (n.d.)) or the EU Artificial Intelligence (AI) Act (Future of Life Institute (2023)), or when modernizing their core banking systems by switching to Cloud computing. All to optimize, stabilize and future-proof data management in the crucial global financial system.

1.3 Societal and Scientific Relevance

This thesis is societally relevant because in the current age of increasing data breaches and privacy concerns, understanding how financial services firms navigate data governance contributes to the safeguarding of sensitive personal data. Furthermore, the insights obtained from this thesis may contribute to practices that help maintain trust in financial services firms and thus maintain the stability of the financial system. Additionally, since it has proven difficult for financial services firms to comply with data governance regulations, such as those in BCBS 239, the improved understanding of the barriers and strategies involved in data governance implementation gained through this thesis can help design more effective regulatory frameworks and thereby increase how fast financial services firms are able to comply.

As stated earlier, this thesis is scientifically relevant as it attempts to close the gap in the literature surrounding the general strategies that are used to navigate the barriers that inhibit (new) data governance implementation. Furthermore, it can help further identify which barriers (financial

services) firms face when attempting to implement new data governance, as current literature on these barriers is rather limited. Additionally, the improved understanding of how (financial services) firms implement data governance, along with the barriers and strategies that accompany this implementation, can help develop data governance frameworks that are more effective to avoid these barriers in the first place.

1.4 Thesis Structure

In order to achieve this goal chapter 2 will analyze current literature on the success of data governance implementation, barriers to data governance implementation and the strategies that are used to deal with those barriers. Chapter 3 will then elaborate on the research methods of this thesis and provide and describe the barriers and strategies that were found. The results of the research will be presented in chapter 4, where strategies will be linked to their corresponding barriers and analyzed and discussed in chapter 5. Chapter 5 will also present the limitations of the thesis and provide recommendations for future research. Finally, chapter 6 will attempt to answer the research questions.

Chapter 2

Literature Framework

This chapter will develop a framework of existing literature based on the research question presented in chapter 1. Since data governance can be quite a vague subject, section 2.1.1 further on in this chapter will provide a description of the current state of knowledge of data governance itself to provide a better feel of the subject. Then a definition of a successful implementation will be chosen based on the available literature in section 2.1.2 to be able to answer the first sub-question of this thesis. Next the literature, some of which has already been mentioned in chapter 1, will be further explored in section 2.1.3 to describe the current knowledge of barriers to data governance implementation and to be able to classify the barriers that will be found in chapter 4. Lastly, the current literature surrounding strategies to deal with the aforementioned barriers will be explored in section 2.1.4 to develop a framework that can be used to help classify the strategies found in chapter 4.

2.1 Conceptual Framework Development

Based on the problem description in chapter 1, the conceptual model in figure 2.1 was drawn. It is assumed that this is a mediation model. This means that there are a series of n barriers that would inhibit the implementation of data governance. These barriers are further discussed in section 2.1.3. The inhibiting relation between the barriers and the implementation success is mediated by applying (a set of) strategies which is discussed further in section 2.1.4. The exact nature of these mediating effects, and what strategies are used to achieve this effect is what this thesis attempts to find. Finally, the success of the data governance implementation is not objective, its subjectiveness and the definition of success that is chosen in this thesis is discussed in section 2.1.2.

2.1.1 Data Governance

According to Janssen et al. (2020), the goals of data governance are ensuring the quality and proper use of data, meeting compliance requirements and helping to use data to create public value. Therefore they define data governance as *"organizations and their personnel defining, applying and monitoring the patterns of rules and authorities for directing the proper functioning of, and ensuring the accountability for, the entire life-cycle of data and algorithms within and across organizations."*

Janssen et al. (2020) go on to describe three approaches to data governance. First is the *planning and*

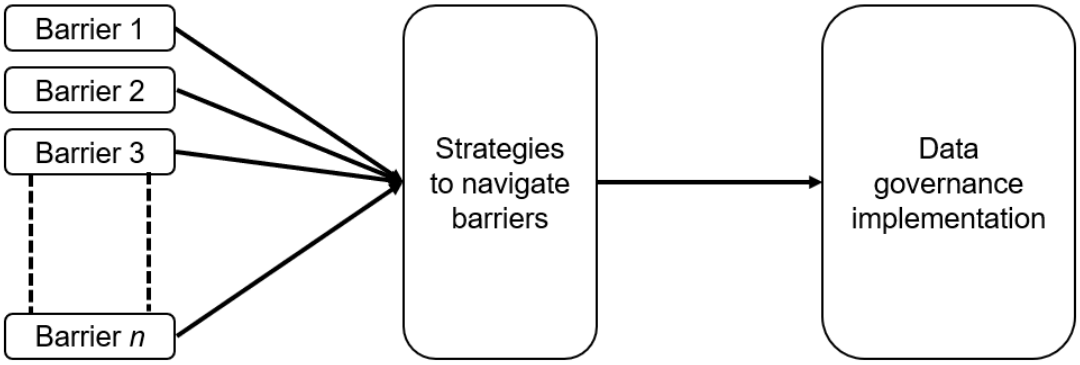

Figure 2.1: The conceptual model of the implementation of a data governance model developed based on chapter 1.

control approach. Organizations taking this approach base their data governance implementation on an annual cycle of planning and control. Targets are formulated every year along with the allocation of budget and teams and departments need to compete with each other to obtain priorities for that year. This makes the process replicable, verifiable and auditable. However, this approach is often criticized for not easily adapting to change (Janssen and Van Der Voort (2016)).

The second approach Janssen et al. (2020) describe is the *organizational approach*. This approach uses a top-down design to set up organizational structures for data governance. This is done through setting up decision-making structures in different data areas underneath the Chief Information Officer (CIO), for example a Chief Data Officer (CDO) or a Chief Artificial Intelligence Officer (CAIO). These structures then in turn include the responsibilities for data governance in their respective areas.

The third approach was popularized in the advent of GDPR and AI. The *risk-based approach* first identifies the risks associated with the data and formulate appropriate governance measures to address these risks (Janssen et al. (2020)). Examples of these risks are: inaccurate data, data loss or data transfer to a different jurisdiction. The risk-based approach is widely advocated as a foundation of data governance.

Khatri and Brown (2010) takes the organizational approach to developing a data governance model. Their model spans five "decision domains": data principles, data quality, metadata, data access and data lifecycle. An organization that wants to implement that model then needs to decide on which level of centralization the decision rights for the decision domain then lie. For example, the decision rights for an organization's data principles could be very centralized with a group of corporate executives while decision rights for data quality may be with data owners in many different business units and thus be highly decentralized.

However, the data governance approaches are not mutually exclusive and can even complement each other. This is evidenced by Karkošková (2022) who developed a data governance model for a specific financial services firm using a combination of the planning and control and organizational ap-

proaches. They use a cycle of data governance increments and evaluations to develop organizational structures that support data governance. The data governance model in Karkošková (2022) spans three domains: "data governance", which includes an assessment of the current state of data governance, development of data strategy and the definition of organizational structures and roles; "data quality management", which includes data quality management process, their associated RACI-matrix (where RACI stands for Responsible, Accountable, Consulted and Informed), data quality monitoring and data verification; and "metadata management", which includes the data architecture, data definitions and data lineage tracking. These domains were then developed over a series of iterations until the stakeholders were satisfied with their functionality.

2.1.2 Implementation Success

Ladley (2020b) describes the following steps for the implementation of data governance: engagement, in this step a clear vision of the necessity of data governance is developed and all stakeholders become fully supportive and engaged in data governance; strategy, in this step a plan and set of requirements that need to be delivered to support and achieve organization initiatives is developed and the data governance policy is aligned with organization-wide strategy; architecture and design, in this step new organization capabilities are developed to sustain the data governance; implementation, in this step the plan to roll out the data governance is made and carried out and data governance is made operational; and operation and changes, in this step data governance is fully operational, activities are being undertaken to make sure it is sustainable and its performance is being monitored.

However, what is a successful implementation? Karkošková (2022) supports Ladley (2020b) by saying: *"It is important to note that data governance is not viewed as a project, but it must be continuously handled as a program to meet changing business and regulatory needs."* Therefore, it is not that simple to define a "successful" implementation. The most concise definition of successful data governance is given by Kooper, Maes, and Lindgreen (2011): *"Implementation of information governance may be considered successful when it has led to an acceptable balance of the information value for the three (groups of) actors involved"*. These three actors are the creator, consumer and governor of the data.

Kooper et al. (2011) uses the term "acceptable" over maximal for two reasons: (1) Using maximal would mean that the value of information can be measured which is questionable since no objective measures can be applied and (2) the three actors might reach an acceptable optimum instead of a maximum since they all have different perspectives. A blogpost by KPMG takes this to a more practical level by stating that successful data governance reduces risk of data breaches, protects customer data, improves quality of the data and ensures the data is compliant with applicable regulations and standards (KPMG Sofy Suite (n.d.)).

Since these implementation projects are often done by outside consultants, it is also important to define the success of a (management) consulting project. According to Bronnenmayer, Wirtz, and Göttel (2016), there are four dimensions that make up the perceived success of a management consulting project: compliance with budget and schedule, degree of target achievement, profitability and expansion and extension of work with a client. Of these four dimensions, degree of target achievement was found to be the most important dimension.

Considering that the target of a (management) consulting project is set by the client, the degree of target achievement is the degree of client happiness with the outcome of the project. In the case of a data governance implementation project, this would mean that the implementation was successful in the sense of Kooper et al. (2011): *"Implementation of information governance may be considered successful when it has led to an acceptable balance of the information value for the three (groups of) actors involved"*. Or put into simpler terms *data governance is successful when all three actors agree on what has been implemented.*

2.1.3 Barriers

As stated earlier, there is a substantial amount of evidence for the existence of barriers that inhibit successful implementation of innovation and/or data governance (Das, Verburg, Verbraeck, and Bonebakker (2018), Sandberg and Aarikka-Stenroos (2014), Drew (1995), Morabito (2015), Al-Ruithe and Benkhelifa (2017)). Sandberg and Aarikka-Stenroos (2014) divide barriers to innovation in two categories: internal and external barriers, each with their own subcategories.

This thesis assumes that the barriers to data governance implementation at financial services firms are roughly the same as the barriers to innovation at financial services firms since the categories of barriers to the implementation of data governance named by Al-Ruithe and Benkhelifa (2017) share considerable overlap with the barriers to innovation implementation (at financial services firms) described in Das et al. (2018). Cordeiro and Vieira (2012) found that 33.3% of the CEOs they interviewed stated that they found internal barriers to be the most important, while 57.1% found both internal and external barriers to be significant and only 8.9% of CEOs thought the external barriers were most important. Furthermore, internal barriers are barriers that a firm can actually influence while external barriers are partially or completely outside of its influence (Sandberg and Aarikka-Stenroos (2014), Das et al. (2018)). Therefore, this thesis will focus on the internal barriers that financial services firms face when implementing new data governance policies. Examples of these barriers found in literature are: overzealous risk management (Das et al. (2018)), insufficient senior management support (Drew (1995)) and lack of focus (Al-Ruithe and Benkhelifa (2017)). Commonly cited external barriers are market turbulence and competitor behavior (Das et al. (2018)).

So far two overarching classes of barriers have been described: *internal* and *external* barriers. However, there are other categories to classify barriers to data governance implementation. Al-Ruithe and Benkhelifa (2017) divide the barriers to cloud data governance implementation, or challenges as they call them, into three categories: technological, e.g. data availability and data migration, legal, e.g. contracts between actors and laws, and organizational/business, e.g. top management support and organization size. However, the classification from Al-Ruithe and Benkhelifa (2017) does not make a distinction between *internal* and *external* barriers and therefore also includes barriers firms have no influence over. Therefore, this thesis will proceed with the overarching *internal* and *external* classifications. Sandberg and Aarikka-Stenroos (2014) divides the relevant category of *internal* barriers into four different subcategories: restrictive mindset, for example fear of change, conservative decision-making or a restrictive organizational culture; lack of competences, for example a lack of knowledge about data governance or a lack of competences to turn data governance into a business proposal; insufficient resources, for example a lack of time or budget to complete the data governance implementation; and unsupportive organizational structures, for example strict hierarchy or bureaucracy causing communication and coordination difficulties.

It is unlikely that a firm suffers from all of these barriers during the implementation of data governance and it is likely that the specifics of the new data governance policies influence what barriers are encountered. For example, if the new policy requires that the company stores their data securely for twice as long as they do now, it is very likely that they do not currently have the data storage capacity for that. This falls under the incompatible IT infrastructure barrier found by Morabito (2015). Another example is that if a company is currently very lax with data privacy and the new policy places a lot of emphasis on privacy and security, there may be resistance and push-back due to the organizational culture acting as a barrier to the implementation. This is further enhanced by the paper from Weber et al. (2009) that developed a "contingency" model of data governance, to address the need for data governance models to be adapted to the firms contingency factors, whatever those may be. Examples of internal contingency factors, that can act as barriers, are organizational structure and decision-making style (Weber et al. (2009)).

2.1.4 Strategies to Deal with Barriers

New data governance policies are often a big change to the usual way of working and thus require appropriate strategies to deal with any barriers resisting this change. D'Este, Iammarino, Savona, and Von Tunzelmann (2012) provide a very basic view to what these strategies should look like. They say that strategies to reduce or remove the impact of barriers should be aimed at the micro-level and thus foregoing the need for high-level, broad, unspecific change management models.

Loewe and Dominiquini (2006) advise conducting an "innovation diagnostic" to determine a firms' specific innovation challenges and opportunities and use that to learn from others who have faced similar challenges. They also promote a holistic view to the innovation process by not just treating the symptoms of the barriers, but their root-causes and not only acting on one root-cause. The root-causes of innovation barriers fall into four different categories according to Loewe and Dominiquini (2006) (leadership and organization; processes and tools; people and skills; and culture and values) and they provide a strategy or "treatment" for each of these categories as can be seen in figure 2.2.

Loewe and Dominiquini (2006) advise to deal with organizational structure barriers through visionary leadership that stresses the importance of innovation through convincing stories and aligning the entire organization around a common definition of innovation. They say that innovation processes should be systematic, but simple to allow for experimentation and idea generation and elaboration. They also advise setting up diverse, cross-functional teams so that people from all over the organization can learn from each other and to allow for a more holistic approach to innovation so that it is weaved into the business model. Lastly, they suggest creating a more supportive organizational culture by allowing employees room to fail and opportunities to provide new ideas without fear of negative judgement and by eliminating bureaucracy and hierarchy.

Meijer (2015) names more specific strategies to deal with barriers to innovation: organizational structure barriers, organizational culture barriers and lack of competences barriers. According to Meijer (2015), organizational structure barriers can be dealt with by demonstrating the ROI as a way of obtaining organizational support; organizational culture barriers can be dealt with through encouraging experimenting with the new technology by employees as a means of diminishing the feeling that technology-induced change threatens their job security and firm leaders actively sponsoring the new innovation to help convince doubtful elements within the firm; and lack of competences barriers can be dealt with through enhancing digital literacy to ensure everyone understands the

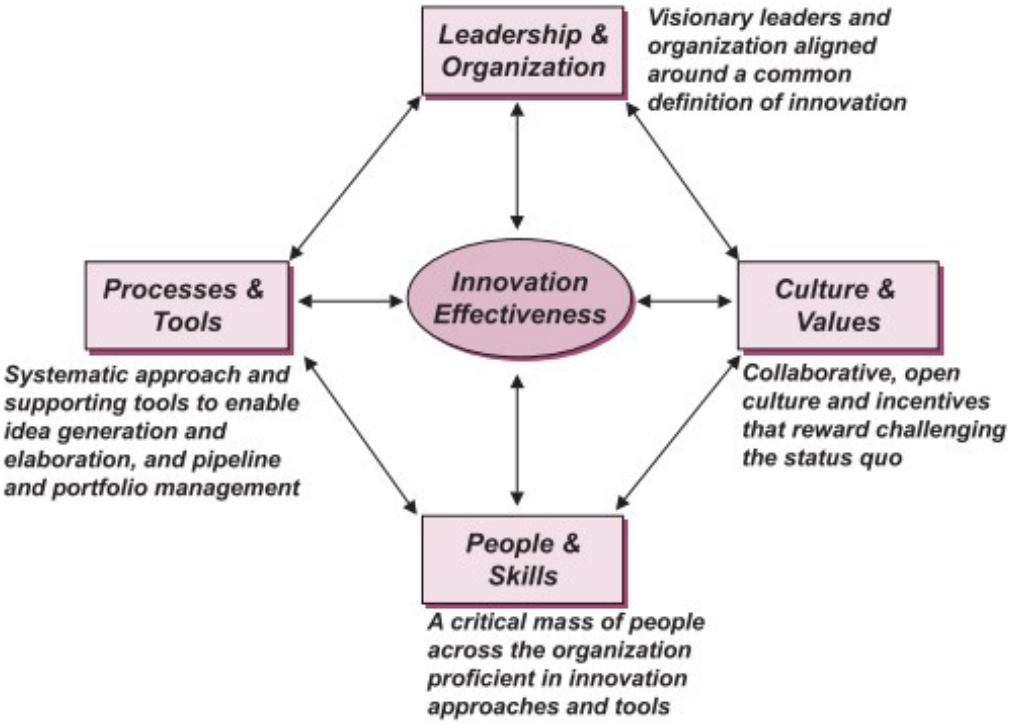

Figure 2.2: A schematic overview of the root causes to innovation barriers and the "treatment" of these root causes to promote effective innovation as seen in Loewe and Dominiquini (2006).

capabilities of the innovation.

Contrary to the approach for dealing with lack of competences barriers of Meijer (2015) that suggests increasing the competences of the firm itself, Sandberg and Aarikka-Stenroos (2014) suggests that in the case a firm runs into a lack of competences as a barrier, they should look for appropriate partners to help develop the implementation with regards to these missing competences, for example through hiring a consulting firm to help with the implementation process or through procuring a third party data quality tool. Aside from demonstrating ROI, all of the aforementioned strategies from Meijer (2015) and Sandberg and Aarikka-Stenroos (2014) can be sorted into the categories from Loewe and Dominiquini (2006). The strategy to deal with a lack of competences from both Meijer (2015) and Sandberg and Aarikka-Stenroos (2014) has considerable overlap with the *People & Skills* category from Loewe and Dominiquini (2006), whereas the strategy for the same barrier from Sandberg and Aarikka-Stenroos (2014) would fit more into the *Processes & Tools* category. The strategy of encouraging experimenting to deal with an unsupportive organizational culture fits right into the *Culture & Values* category, whereas the Meijer's other strategy to deal with the same barrier fits more in the *Leadership & Organization* category.

Parris et al. (2016) also discuss strategies to overcome barriers to the implementation of innovation. The strategies they name are essentially more detailed versions of the strategies named above. Examples of this are: selecting a preliminary champion for the innovation who can articulate all

the potential benefits to sell the idea to a broad array of stakeholders, as an example of visionary leadership; developing a solid proposal with emphasis on costs and benefits that can be delivered in a short elevator speech, as an example of demonstrating ROI; and hiring a specific project manager and empowering skilled personnel to be accountable for the implementation, as an example of providing the enabling processes and tools for the implementation.

Chapter 3

Methods

This chapter will discuss the research methods that were used in this thesis to help answer the research question from chapter 1 based on the framework that was provided in chapter 2. This chapter will first go into the research design and then discuss the two instruments that were used to gather the data.

3.1 Research Design

The aim of this research is to find out how managers at financial services firms deal with the barriers they face when implementing new data governance. Since this research aims to answer a "how" question, this research applied a case study design (Yin (2009)). More specifically, a multiple case study design was applied to be able to compare similarities and differences between cases and increase robustness of the research (Hunziker and Blankenagel (2021)). Data for this research was gathered through semi-structured interviews with people closely involved in the implementation projects. The individual interviews were followed up on by a single focus group interview with participants from PwC Advisory to briefly validate the findings from the individual interviews, have an open discussion about the actionability of the results for future data governance implementations and thereby aid in developing a cross-case analysis, which is an advantage of a multiple case study design (Hunziker and Blankenagel (2021))

To ensure that a broad range of high-quality data governance implementation cases are a part of this research, it was chosen to complete this research in collaboration with the PwC Advisory branch in the Netherlands. They helped select six different cases that had encountered barriers in their data governance implementation from banks and pension providers and provided the opportunity to interview someone from the team who had worked on the project for each case. All six of these cases were projects that had been done in the past three years. The first case regarded the analysis of the implementation of the current data governance policy at a large Dutch bank and the development of a high-level roadmap for the implementation of a new data governance policy to restructure their global customer data. Therefore this case carries out steps one and two of the five steps of data governance implementation by Ladley (2020b). The second case regarded the analysis of the implementation of a new data governance policy at a Dutch pension firm that was initiated because of the Dutch new pension law that went into effect on July 1st 2023 (Dutch Department of Social Affairs (2023)). This case went through the first four steps from Ladley (2020b). The

third case regarded a risk analysis of the current data governance policy at a large Dutch bank and the development of a high-level roadmap and a business case for the implementation of a new data governance policy for the decommissioning of their legacy applications. Therefore this case carries out steps one and two from Ladley (2020b). The fourth cases regarded the full implementation of a new data governance policy at a large Dutch bank due to their transition from legacy systems to cloud-based systems, thereby completing all five steps from Ladley (2020b). The fifth case regarded the analysis of the implementation of the current data governance policy to convince the management board of a large Dutch bank of the need to implement a new data governance policy and the development of a high-level plan for the implementation and aligning data governance with the firm's overall strategy, thereby completing steps one and two from Ladley (2020b). The sixth and last case regarded the vision of a corporate executive with regards to a transition to cloud-based systems and the accompanying data governance. This was followed by the development of an implementation plan, a risk analysis and mitigation plan and a data architecture, thus completing steps one through three from Ladley (2020b). These case details are summarized in table 3.1.

Table 3.1: A summary of the case details.

Case	**Project details**	**Steps completed from Ladley (2020b)**	**Firm type**
1	Current DG analysis and high-level roadmap development towards new data governance	1 & 2	Bank
2	Change to new Dutch pension system	1-4	Pension firm
3	Current DG (risk) analysis and high-level roadmap development towards new data governance	1 & 2	Bank
4	Change from legacy systems to Cloud-based systems	1-5	Bank
5	Current DG analysis and high-level roadmap development towards new data governance	1 & 2	Bank
6	Preparing change to public Cloud-based systems	1-3	Bank

When these six cases are put next to the definition of a successful implementation from section 2.1.2, cases two and four have completed a "successful implementation of data governance". However, an argument can be made that case 6 also completed a successful implementation since according to participant 6.1 (from table 3.2) *"all stakeholders fully trusted the new data governance policy"*, satisfying the success condition formulated in section 2.1.2, and implementations of the data governance were being done application by application at the time of the interview. On the other hand, the other three cases have not particularly completed a successful implementation, however, they have completed at least the first two steps from Ladley (2020b). Therefore, these cases have some degree of success as well, which was one of the case selection criteria. The other case selection criteria were the sector, the project had to have been completed in the financial services sector; availability of participants, at least two participants had to be able to be interviewed about a case, and the case had to have happened recently, so that recall bias would play less of a factor and participants would

be able to remember details about the case.

3.2 Interviews

3.2.1 Interview protocol

Primary data collection was done through semi-structured interviews. This was the most suitable method as it allowed for flexibility to explore participants' experiences, perspectives and approaches while maintaining a consistent set of core questions. Before the interview process, the areas and topics of focus were defined to help develop a framework of questions to help obtain the right information. Furthermore, the protocol was set up to make the interviews as clear and concise as possible to avoid jargon and compound sentences that could cause confusion. According to George (2023), these three steps help get the right information from the interviews without biasing the responses. The full interview guide is provided in appendix A.

In their invitation to the interview, participant's were already told the exact case they were to be interviewed on so that they could prepare and potentially look into case document's to help remind them of case details and help refresh their memory. Before the start of the interview, the interviewer and participant exchanged in a brief informal conversation to ensure that participant's felt comfortable in their interaction with the researcher, to ensure a "good" response (Barriball and While (1994)). Following that, the interview starts with an introduction to discuss the confidentiality of the research and to ensure the consent of the participant. The participant was then reminded of the case they were going to be interviewed on and politely requested to limit their responses to only discuss this case and not discuss any other data governance related projects they had worked on. The first two questions they were asked regarded the background and context of the case and the role of the participant in the case. These questions were used to develop an understanding of the approach and design this case had towards their data governance.

When the context of the case was clear, participants were asked to sketch out a project timeline to develop a clearer view on the implementation process and to help participants think about the steps they had taken to help remind them of any additional case details they might have forgotten. Participants were then asked to describe the barriers they encountered during this process and the strategy they used to deal with these barriers. Furthermore, they were asked if they felt that any of the strategies they used were particularly effective or ineffective.

Lastly, participants were asked about the lessons they learned during this process and how they rated the success of their case. They were also asked to provide the metrics used to judge this success rating. Then there was room for participants to provide any additional comments or ask any questions to the researcher they might have. Finally, participants were thanked for their time and a moment was taken to re-agree on the confidentiality of the interview and restate their consent.

3.2.2 Interview Participants

Participants for the interviews were selected with the help of a manager at PwC Advisory. It was chosen to conduct the interviews with PwC employees instead of employees of the financial services firms themselves for three reasons: as external consultants they are more likely to offer a more

neutral and objective viewpoint compared to internal employees, this neutrality can be beneficial for obtaining candid responses and avoiding potential biases that arise from internal perspectives (Von Soest (2023)); they are more likely to have knowledge of the entire process since they are hired to help and advice top-level management as well as perform more "grunt-level" work during the implementation phase (Larsson, Andersson, Markowski, Nilsson, and Mayor (2019)); and practicality, coordinating interviews with one consulting firm is more simple and efficient than coordinating interviews with multiple financial services firms and their employees. The manager provided a list of PwC employees who had worked on the six cases that were selected beforehand.

For four of these cases, this list contained only two people that had worked on this project. Therefore, to maintain a consistent approach to each case, it was chosen to interview two people per case spread across two rounds. The interview guide was revised in between the two rounds to make sure anything that remained unclear after the first round could be cleared up in the second round. If after that, participants still had conflicting answers on the same subject, they were contacted individually to clear up any possible misconceptions and discover the reasons for these conflicting answers. For the cases that had more than two people on the list of potential participants, participants were selected based on the following selection criteria: extent of involvement in the process, participants who have been involved in more steps from the five steps of data governance implementation from Ladley (2020b) are likely to have more knowledge; diversity of roles, there was a preference of selecting a second participant with a different role in the project compared to the first to capture more perspectives and a broader knowledge of the case; and availability, if more participants were as equally qualified the criterion of availability was used to select the person that was available at the earliest moment to make the research process more efficient. These potential participants were then invited through the Microsoft Teams scheduling tool that automatically provided suggestions for appropriate timings for the interviews.

As discussed in section 3.2.1, only one of the cases completed all five steps from Ladley (2020b). Another case completed the first four steps, another the first three and the other three cases only completed the first two steps. A full overview of the cases is given in table 3.2. The first participant who was interviewed about the case is denoted with $x.1$ and the second participant with $x.2$ as can be seen in the first column of table 3.2, their role in the project is displayed in the second column, the steps that they were involved in are displayed in the third column and the last column displays the firm they completed the project at.

3.2.3 Data Collection

Individual interviews were conducted virtually through Microsoft Teams which allowed the interview to be recorded easily and the automatic writing of a rough draft of the verbatim interview transcript. Ten out of twelve interviews were conducted in Dutch, but coded in English, because the participants were more comfortable in Dutch and two interviews were conducted in English because the participants did not speak Dutch. Since the interviews were conducted virtually, prior to each interview, consent was obtained from each participant, ensuring confidentiality and voluntary participation. During the interview, the interview guide in appendix A was used to provide structure to the interview and ensure all interviews went according to the plan described in section 3.2.1. After the interviews, the audio recording was listened back to eliminate any mistakes in the automatically generated transcript, e.g. the automatic Dutch transcript often contained "PBC" or "PVC" instead of "PwC". After finishing the transcripts, interview recordings were deleted. Furthermore, steps

Table 3.2: An overview of the cases the interview participants had worked on.

Interview	**Role**	**Implementations steps completed**	**Firm**
1.1	Responsible for final deliverable	1 & 2	Bank Alpha
1.2	Engagement lead	1 & 2	Bank Alpha
2.1	Engagement lead	1-4	Pension firm Bravo
2.2	Project management support	1-4	Pension firm Bravo
3.1	Engagement lead	1 & 2	Bank Charlie
3.2	Finance and risk, data and investments	1 & 2	Bank Charlie
4.1	Implementation team	1-5	Bank Delta
4.2	Overview of implementation	1-5	Bank Delta
5.1	Data management	1 & 2	Bank Echo
5.2	Data management	1 & 2	Bank Echo
6.1	Risk and compliance	1-3	Bank Foxtrot
6.2	Data architecture	1-3	Bank Foxtrot

were undertaken to ensure no confidential or personal identifiable data will be publicized. This will all be in compliance with TU Delft Human Research Ethics Committee regulations who have approved the methods used in this research.

3.2.4 Data Analysis

All transcripts were automatically generated in Microsoft Word documents. These transcripts were edited based on listening to the audio recordings to eliminate any mistakes in transcription, as mentioned in section 3.2.3.

Data Reduction

According to Miles and Huberman (1994), the first step to qualitative data analysis is data reduction. This was done through randomly selecting five transcripts, creating a code for summarizing these excerpts and broader themes of these codes. The broad themes were divided into *Project details*, *Timeline*, *Barriers*, *Strategies* and *Measures of success*. Some examples of this are: *"The business case and the high-level roadmap were both delivered and were both well received."* was coded as "positive judgement of deliverable" within the broader "measures of success" theme; *"(...) training and involving people in the process was the best way to conduct to ensure sustainability and adaptability."* was coded as "stakeholder training" and "stakeholder involvement" within a broader "strategies" theme; *"(...)besides, the stakeholder is sometimes unavailable (...)"* was coded as "stakeholder availability" within a broader "barriers" theme; *"We started off with a kick-off session with the core team to make sure everyone is on the same page."* was coded as "kick-off session" within the broader "timeline" theme, all steps following this example were all grouped in chronological order within the "timeline" theme of that case; and *"(...) I was the engagement lead and responsible*

for the final deliverable (...)" was coded as "engagement lead" within a broader theme of "project details", where all case details (assignment description, the role of the participant, the reason for the need to implement new data governance, etc.) were grouped into.

This initial code was then used to deductively code the other transcripts and the codes were grouped into themes based on their similarities. This grouping helped with an initial structuring of the data. These codes and themes were then imported into Microsoft Excel and reviewed to make sure they are useful and accurate representations of the data. This was done by re-reading interview transcripts to look over which excerpts belonged to which themes. The codes for barriers and strategies were further treated with more detail to be able to compare them with literature.

During the coding of the interviews, eighteen different barriers to the implementation of new data governance at financial services firms in the Netherlands were discussed. For this coding the barriers were used that had already been found in literature by Drew (1995), Morabito (2015) and Das et al. (2018). However, some of the barriers in these papers had so much overlap that they were then classified as the same category in the 1st order constructs in coding, for example "Organizational inflexibility" and "Unsupportive organizational structure". Table 3.3 displays the code book of the barriers that were found in the individual interviews. The first column of the table displays the 2nd order constructs that are formed by the 1st order constructs that were discussed earlier, which are displayed in the second column of table 3.3. The definition of these 1st order constructs is displayed in the third column and an exemplary quote from the individual interviews is displayed in the fourth column along with the participant who said the quote. The last column shows the grounding of the quote with the number of times the 1st order construct was mentioned in total on the left and the number of individual interviews this construct was mentioned in is displayed on the right in brackets. Section 4.2 will describe the contents of table 3.3 in more detail as a part of the results chapter.

Similarly to the barriers above, the strategies used to deal with the barriers were also sorted into different categories during coding. Thirty different strategies were found during initial coding, but again some of them were found to be too similar to others and were thus assimilated. An example of this is "global vision", "global direction" and "corporate vision" which were all grouped under "develop global vision". This left nine unique strategies, which, unlike the barriers, were not drawn from existing literature, since no specific strategies had been found in literature. These 1st order construct categories were then grouped into broader 2nd order constructs, in the same way as the barriers in the previous section, as can be seen in table 3.5. Section 4.3 will describe the contents of table 3.5 in more detail as a part of the results chapter.

Data Display

The next step from Miles and Huberman (1994) is to display the data. Eisenhardt and Graebner (2007) suggest displaying the data in tables and other visual devices that summarize the related case evidence and creating a summarizing "construct table" that summarizes evidence and indicates how each construct is "measured". In this research the data is displayed in three different tables, a table with the code book for the barriers (table 3.3), a second table with the code book for the strategies (table 3.5). The third table forms the core of the results and matches the strategies to the barriers and was used to elaborate on how these specific strategies were used to address the specific barriers, as illustrated in figure 2.1.

Table 3.3: The code book of the barriers that were found in the individual interviews.

2^{nd} order construct	1^{st} order construct	Definition	Exemplary quote	Grounding
Organizational culture/structure	Restrictive mindset	Quotations concerning the restrictive and conservative mindsets surrounding change.	*"There was discussion surrounding data ownership that dominated over the need to migrate to the new system.", 3.1*	6 (4)
	Unsupportive organizational structure	Quotations concerning examples of unsupportive organizational structures in financial services firms.	*"The stakeholder management and governance structure at the firm are very complex and additionally there are multiple external stakeholders with immense power.", 2.2*	52 (12)
	Cultural barriers	Quotations concerning barriers that exist due to cultural differences between different national branches of the firm.	*"The German cultural thoroughness and punctuality made them not want to adopt the global system they saw as inaccurate.", 1.1*	4 (2)
	Employee turnover	Quotations concerning the turnover of employees and the involved loss of knowledge and decision-making power.	*"The CTO left during the project and nobody is able to make a decision due to the absence of C-level.", 6.1*	6 (2)
	Overzealous risk management	Quotations concerning the risk aversion of the financial services sector.	*"The company aims at perfect control of data even though that was not necessary due to external controls.", 2.2*	15 (3)
Senior management priority	Unfocused strategy	Quotations concerning an unfocused strategy.	*"They have a vision on data that does not go much further than: we want to do smart things with data.", 2.1*	19 (5)
	Diverging and opposing priorities	Quotations concerning diverging and opposing priorities within the organization.	*"Certain stakeholders resisted the change due to their own personal agenda's.", 3.2*	44 (8)
	Time and financials	Quotations concering the lack of time and financials for the project.	*"There is a certain capacity within a team and if part of that capacity is used to implement the change, it is not used to directly create value for the business.", 4.2*	12 (5)
	Insufficient senior management support	Quotations concerning insufficient support for the project from senior management	*"Program manager with opposing view tried sabotaging the change.", 3.1*	13 (4)
IT performance	Incompatible IT systems	Quotations concerning incompatible IT systems within an organization.	*"The process did not go over very smoothly due to the different mutually incompatible IT systems.", 1.1*	15 (6)
	Performance of IT department	Quotations concerning the performance of the IT department.	*"We had to wait for the data to get unlocked and moved into the data lake.", 2.1*	19 (6)
Lack of information	Lack of understanding that business definitions vary	Quotations concerning the lack of understanding that some people may understand certain terms differently.	*"If you don't agree on a definition of done, you will run into problems with differing expectations at the end.", 2.1*	4 (2)
	Lack of information on markets	Quotations concerning the lack of information on what the rest of the market is doing.	*"Because it's new we see a change in the rules of the game every month or so.", 2.1*	16 (4)
	Lack of information on technology	Quotations concerning the lack of information on specific technologies.	*"There is a machine learning tool that we could use to enhance the process, but we do not use it as much because seniors at the business do not understand how it works.", 2.2*	7 (1)

An empty version of this table is displayed in table 3.4. This table is used to display the relationship between the barriers that were encountered and the strategies that were used to deal with them. These relationships will be displayed in table 3.4, where the 2nd order barrier constructs from table 3.3 are displayed in bold in the first row and the 2nd order strategy constructs from table 3.5 on the first column. The cells where a barrier and strategy cross will be used to display the specific strategies that were used to address the barriers from that 2nd order construct. Using this table, the specific strategies that are used to deal with specific barriers will be elaborated upon using quotes from the interviews to describe how the strategy deals with the barrier, for example through obtaining senior management support or through making changes in the organizational structure.

Table 3.4: An empty version of the table that will be used to provide an overview of the specific strategies that were used to address specific barriers.

	Organizational culture/structure	**Senior management priority**	**IT performance**	**Lack of information**
Senior management vision/ championing				
Technological tools/ skills				
Stakeholder involvement/ consensus				
Business case				

Table 3.5: The code book of the strategies that were found in the individual interviews.

2^{nd} order construct	1^{st} order construct	Definition	Exemplary quote	Grounding
Senior management vision/championing	Develop global vision	Quotations concerning the strategy of developing a global vision and/or strategy surrounding data and data governance.	*"The global head office needs to develop more of a vision or direction of where and how they want to record and store their data.", 1.1*	10 (6)
	Limit autonomy	Quotations concerning the need to limit the autonomy of teams or department to decide which systems they want to use and which projects they would like to start working on.	*"You get to decide how you want to manage the system, but you have to work with this system otherwise if everyone decides on their own system the entire data landscape gets fragmented.", 1.1*	3 (3)
	Champion importance	Quotations concerning the importance of a champion or sponsor at a senior management position within the organization.	*"My product owner was definitely a champion for this project. He really saw the necessity and fought to obain the priority.", 4.1*	7 (5)
Technological tools/skills	Standardization	Quotations concerning standardizing systems and implementations across teams and departments.	*"I'm forming one team across the entire transformation to avoid isolation of the different steps and to streamline the process.", 2.1*	15 (5)
	Develop technological solutions	Quotations concerning technological solutions that help streamlining the transformation process.	*"A machine learning tool was developed to help check the data to help free-up capacity for humans to help in the actual transformation.", 2.2*	17 (7)
	Training	Quotations concerning training and upskilling both employees and senior management on the use and understanding of the new technologies used.	*"This way the training was really important on both sides, make sure the engineering team understood the risks and the risk team understood the technology.", 6.1*	10 (5)
Stakeholder involvement/consensus	Stakeholder involvement	Quotations concerning the need to involve stakeholders in how the change will go and make sure their opinions are heard.	*"We need to get the business stakeholders on board to obtain the necessary capacity and resources.", 4.2*	55 (11)
	Stakeholder consensus	Quotations concerning the need to have stakeholders agree to the changes that are going to happen and on who is responsible for what, e.g. with a RACI matrix.	*"We had to agree on a way of working together that involved making deals that everyone agreed on surrounding the work that had to be done.", 5.1*	31 (8)
Business case	Build a broad business case	Quotations concerning the construction of a (broad) business case to create a sense of urgency and necessity at the firm.	*"You have to look at the business case in a very broad sense to make sure everybody in the business feels the pain and understands the benefits.", 1.2*	32 (6)

3.3 Focus Group interview

Since the interview sample was rather small which could endanger the research's validity, it was decided to follow up on the individual interviews with a focus group interview at PwC Advisory as this can be a source of validation of individual interviews (Frey and Fontana (1991)). The other goal of the focus group was to formulating actionable recommendations from the results of the individual interviews, which is another way the focus group interview can supplement individual interviews ac-

cording to Frey and Fontana (1991). The focus group started with a presentation of the research and the results of the individual interviews and then asking how they feel about the results and whether they would like to add something to the results as a source of validation and finally facilitating a brainstorming session to come up with (new) actionable recommendations based on the results.

3.3.1 Composition of the Focus Group

Invitations were send to roughly twenty people at PwC who had experience with working on projects that involved implementing data governance at financial services firms in the Netherlands. Nine of these twenty people had already been interviewed in the individual interviews and were invited as the main source of validation for the individual interview results, as recommended by Frey and Fontana (1991). The other eleven people were not familiar with the research yet, and would thus need some more time to introduce them to the research, but they would also be more likely to bring forward previously unmentioned ideas that can stimulate discussion in the brainstorming session. Out of these twenty, only eight people actually attended. The other twelve people indicated that they were very interested in participating, but had conflicting work priorities. The participants of the focus group did form an accurate reflection of the group that was invited. They had the same mix of work experience with a range of employees up to senior management. The focus group participants also had the same mix of people previously familiar and unfamiliar with the research as the group that was invited, thus maintaining the ratio that was predetermined to help validate the results and also put forward novel ideas.

3.3.2 Facilitation of the Focus Group

The focus group interview was completed at the PwC office and made use of slides containing information on the topic of the research and the results from the interviews and an anonymous online interactive presentation tool called Mentimeter which can be used to ask questions to the audience and have their answers show up on the presentation screen. The focus group started off with a five to ten minute presentation about the topic of the research.

Following the presentation the participants were asked the question through Mentimeter what they thought would be the most named barrier to the implementation of data governance at financial services firms to kick-off their participation. Moving on to the next ten minute segment during which the results of the individual interviews were presented including which barriers and strategies were named how many times and which specific strategies were used to address which specific barriers. Following up on this presentation, the participants were asked to answer how they felt about these results again through Mentimeter. Then using the word cloud that resulted from their answers, which is displayed in figure B.1 in appendix B, there was an open discussion for about ten minutes about how recognizable they felt it was and whether there was anything they felt was missing in table 3.4. Any additions they had were then added to table 3.4 in italics. This discussion was then rounded up and followed by the question what they thought about the actionability of these results. There was again a twenty to thirty minute brainstorming session, without the support of Mentimeter. During this brainstorming session participants discussed on what they could use these results for at their current projects and how they could use the results in the future to improve the processes of future projects.

3.3.3 Data Analysis

Focus group interview data was collected through Mentimeter and through notes made during the discussions. The Mentimeter data was collected in a word cloud (figure B.1) that displayed the feelings of participants with respect to the individual interview results. The word cloud was then used for a discussion to stimulate recall (Frey and Fontana (1991)) for the participants who had also been individually interviewed and for the participants who had not been individually interviewed to weigh in with their experiences of which the researcher made notes. The word cloud was then used, together with the notes, to validate the results from the individual interviews. After this discussion, participants had the chance to add anything they felt was missing from table 3.4 which was collected through Mentimeter and notes made by the researcher and these suggestions were subsequently added in italics to the the table.

After this validation of the individual interview results, participants were asked what they thought were the practical implications of these results. It was attempted to collect responses through Mentimeter, however due to a very enthusiastic participant, it turned into an open brainstorming session. The researcher collected notes of this brainstorming session that were analyzed to obtain the practical implications and any actionable recommendations of the research.

Chapter 4

Results

This chapter presents the result of this research. It includes a filled out version of table 3.4 from the previous chapter and it will provide more context to the contents of this table. After the description of the strategies that were used to deal with the barriers that were encountered, there will be a brief description of the barriers and strategies themselves from tables 3.3 and 3.5 respectively.

4.1 Integration of Strategies and Barriers

So far, the barriers to implementing new data governance at financial services firms in the Netherlands and the strategies used to address them have only been named separately. However, it is crucial to recognize that these elements are not isolated; rather, they exist in a symbiotic relationship. Strategies are formulated in response to barriers, illustrating the dynamic and interdependent nature of the implementation process. Therefore, the interview participants were also not asked about the barriers in strategies in isolation, but rather about their symbiosis, i.e. which strategies did they use to tackle which barriers?. These relationships are displayed in table 4.1, where the 2nd order barrier constructs from table 3.3 are displayed in bold on the horizontal axis and the 2nd order strategy constructs from table 3.5 on the vertical axis and where the cells where the two cross display the specific strategies that were used to address the barriers from that 2nd order construct. Furthermore, the strategies displayed in italics were not mentioned in the individual interviews, but were added based on comments from the focus group interview.

4.1.1 Table axes

As mentioned above, the horizontal axis of table 4.1 displays the 2nd order barrier constructs from table 3.3. The first cell says *Organizational culture/structure* which contains all of the barriers that are caused due to unsupportive organizational cultures or structures, for example *overzealous risk management* or *employee turnover*. The second cell says *Senior management priority* which contains all of the barriers that are caused due to insufficient or conflicting priorities within (senior) management, for example *unfocused strategy* or *lack of time and financials*. The third cell says *IT performance* which contains all of the barriers that are caused due to an underperformance by a firm's IT, for example *Incompatible IT systems*. The last cell says *Lack of information* which contains all of the barriers that are caused due to a lack of information, for example *lack of information*

on technology.

The vertical axis of table 4.1 displays the displays the 2nd order strategy constructs from table 3.5. The first cell says *Senior management vision/championing* which contains all strategies that include direct influence from senior management through developing or articulating their vision or through their championing. The second cell says *Technological tools/skills* which contains all strategies that include using or developing technological tools and skills to mitigate a barrier. The third cell says *Stakeholder involvement/consensus* which contains all of the strategies that involve getting all stakeholders to agree or involving all stakeholders in the implementation process. The last cell says *Business case* which involves the development of a broad business case to, for example, help obtain organizational support.

4.1.2 Organizational Culture & Structure Barriers

This subsection will describe all of the strategies that were used by financial services firms to deal with the barriers that fall under the 2nd order barrier construct of *Organizational culture/structure*. The description will start with the strategies in the first cell below "**Organizational culture/structure**" and work its way down the column from there.

The first strategy that can be seen is developing a data governance vision. This means that the senior management, or probably more specifically the board and the C-suite, need to develop a vision on what they would like to do with the data, how they would like to create value, what kind of risks they find acceptable, etc. in order to have a clear vision and strategy for the rest of the organization. A strong example of this was seen in case 4, where an attempt was made to start the data governance implementation before there was a clear organization-wide vision. This attempt stalled, forcing the firm to return to the drawing board and *"(...) 18 months later there were more organization-wide guidelines and boxes we had to check for the implementation."* (Participant 4.1). This was confirmed by participant 4.2 who stated *"I think it was important to develop a vision of the change in culture, way of working, stakeholder management, architecture etc. to create a uniform process."* According to participant 4.1 this *"(...) made the process a lot easier to manage and the scope a lot easier to define."*. Therefore a clear organization-wide vision on data governance can help deal with organizational culture and structure barriers through clearly defining the roles and the steps that need to be taken and thus creating an organization that supports the importance of data governance and a structure that supports its implementation. The other strategy that senior management can use to deal with organizational culture and structure barriers is limiting the autonomy of individual teams and employees. There were three interviews that found that the autonomy of different branches, teams or individual (software) developers at an organization led to inefficiencies or operational risks. This was due to varying choices on systems of records or developers starting with the hardest tasks because they found it more interesting instead of starting simple and learning along the way to make the hardest tasks less complex. Participant 1.2 stated that:

> *"(...) there is a central vision on what they want to do with data governance. However, due to the autonomy of the different branches and teams, there are other choices that dominate the discussion. Therefore you have to be able to obtain some sort of mandate to limit the autonomy of these branches and say this is how we are going to do it."*

Table 4.1: An overview of the specific strategies that were used to address specific barriers.

	Organizational culture/structure	**Senior management priority**	**IT performance**	**Lack of information**
Senior management vision/ championing	•Develop data governance vision •Limit autonomy	•Champion and sponsor importance	•Free up capacity through championing	•*Develop a clear vision*
Technological tools/ skills	•Standardization of processes •Ensure proper understanding of risks	•*Training*	•Standardization of processes •Circumvent bad quality data	•Training
Stakeholder involvement/ consensus	•Develop proper RACI matrix •Involve stakeholders in design and implementation process •Streamline communication	•Top-down and bottom-up communication and involvement	•Involve stakeholders in design process	•Avoid knowledge silos through communication
Business case	•Develop a broad business case	•Develop a broad business case •Cover personal interests	•*Include personnel in business case*	•Provide cost and benefit information through business case

A similar statement was made by participant 5.1 *"If you want to implement this across the organization, you need to have a 95% uniform process, but leave 5% customizability for specific wishes of the branch."* That this works was confirmed by participant 4.1 who stated that *"It definitely has advantages, a uniform company-wide programme. It makes sure everyone understands the priorities and makes sure they get to work."* Limiting the autonomy of teams and employees can thus help remove organizational structure and culture barriers through creating a more uniform implementation process across the organization to help people understand the priorities and importance. This makes sure they start work with what the organization deemed as the most important and not what they as individuals thought was most important.

The next cell starts with the strategy of standardizing processes. This is the technological extension of the "limit autonomy" from the previous cell. According to participant 6.2 *"Providing standardized templates for data infrastructures will simplify the process for developers."* This was said to be an appropriate strategy to deal with an organizational culture that normally gives developers a lot of freedom so that they can work more innovatively. However, this freedom can lead to them overcomplicating things and providing standard templates for important parts of the data governance implementation makes sure this overcomplication is avoided. The next strategy is used for organizations that suffered from overzealous risk management. An example of this was case 2, where participant 2.2 stated that *"Endless quality control checks led to enormous delays. These checks were not even necessary since external controls existed to ensure the involved risks remained within the company's risk appetite."* If the entire organization is properly educated on the risks involved with the implementation program and the data governance itself, overzealous risk management can be avoided.

The cell below contains the strategies pertaining to stakeholder involvement and consensus that were used to tackle organizational culture and structure barriers. The first strategy involves setting up and enforcing a proper RACI matrix. If an organization's structure led to extensive discussions about data ownership, setting up a RACI matrix helped to clearly define the roles in the process. Cases 1 and 5 actually advised setting up a RACI matrix as part of step two. According to participant 5.1 *"A complete RACI matrix for all data systems and different data fields will a lot of clarity in the data ownership discussion."* This was one of the strategies that was also put forward by the focus group, stressing the RACI matrix should not only be completed, but enforced as well. The next strategy in this cell is the involvement of stakeholders in the design and implementation process. Participant 1.2 advised *"You need to use a multidisciplinary team to design the implementation, business stakeholders, solution architects and risk and regulatory experts."* Participant 2.1 also advised the use of a *"cross-functional team"* that oversees the implementation process to avoid organizational *"islands"* that blame each other for mistakes in the implementation instead of cooperating to fix the mistakes. This ensures that change is not only top-down directed, but also supported from the bottom-up as done in case 6. Participant 6.1 said *"We also let them (the stakeholders) sit together during the design phase and have them achieve consensus on what needs to happen."* This ensured stakeholder support to obtain sufficient organizational support. Another strategy in this cell is the streamlining of communication. This is especially important in firms that suffer from organizational structure/culture barriers due to high levels of bureaucracy. For example, in case 2 participant 2.2 found that there were *"too many meetings"* and that there were *"too many people in them"*. To address this barrier they *"(...)reduced the number of people in meetings and the number of meetings of in total by making sure that only the "right" people were in the meetings."* This made the entire implementation process run much more smoothly.

The last cell in this column only contains one strategy, but it is one that has been mentioned very often: the development of a broad business case. A broad business case can help unsupportive elements in an organization, for example stakeholders on the business side that only see a decrease in capacity of their technology teams, see the benefits of the end-result of the implementation on their specific interests and sway their minds in supporting the implementation. Participant 1.2 said about the business case that it *"needs to be strong enough to create such a mandate that otherwise autonomous branches are convinced they need to follow along with the organization-wide program."* They suggests building a business case *"across multiple axes, so that all stakeholders feel the necessity and the pain if the implementation is not done."* This included direct monetary costs and benefits analyses, but also including risks that were hard to monetize or other indirect costs and benefits that were harder to monetize, such as increased organizational flexibilities or increased technology capabilities. Participant 4.2 experienced that *"As soon as the business-side stakeholders saw the benefits of the new data governance policies, they were immediately convinced of the necessity of the program and fully supported it."*

4.1.3 Senior Management Priority Barriers

This subsection will describe all of the strategies that were used by financial services firms to deal with the barriers that fall under the 2nd order barrier construct of *Senior management priority.* The description will start with the strategies in the first cell below "**Senior management priority**" and work its way down the column from there.

The first cell states the importance of champions and sponsors to help achieve priority for the implementation process. The individual interviews only mentioned internal champions and sponsors, but the focus group added that there are also external champions and sponsors that could also help achieve the required effect, for example the central bank or another regulatory body. Therefore, it is important to find someone with power in or over the organization to help champion or sponsor the project to achieve the necessary priority. This importance is exemplified by participant 6.1 who said *"The initiator of this program was someone directly below the CTO who thus had no trouble convincing everyone of the necessary priority."* However, this participant also said the program stalled when the CTO left the company as there now was no one to make executive decisions. Another example was found in case 4, where participant 4.2 said *"The program leader probably was not high enough up the corporate ladder to convince everyone of the necessity of the project."* Therefore, an appropriate champion and/or sponsor, can help obtain the necessary priority for the implementation by using their position to talk to other senior stakeholders and convince them using their strong story.

The cell below contains only one word, "Training". This indicates the importance of training and upskilling senior management to help understand the urgency of the transformation. This strategy was brought forward by the focus group as well as participant 6.1 who stated *"The initiator of the project definitely acted as a sponsor of this project because of their knowledge of the technology as well as the financial services industry."* A champion or sponsor who knows both the financial side as well as the technology side can thus make a bigger impact in obtaining priority than a champion or sponsor who knows just one of the two sides. The focus group thus stated that training and upskilling of senior management with respect to data governance is very important to ensure priority.

The strategy in the third cell "Top-down and bottom-up communication and involvement" means that in order to ensure (senior)management priority for the implementation all along the chain, up

to the board and C-suite, the organization needs to involve the stakeholders along this chain, look out for their interests and communicate their ideas up and down the chain. A prime example of this was found in case 2, where participant 2.2 said:

> *"We, as the actual implementation team, did not have any communication with the team high up on the corporate ladder that decides on the actual policy surrounding data within the organization. This made us think that there might be a mismatch between our knowledge and their knowledge."*

This made the team doubt the commitment and priority from senior management which led to frustrations within the implementation team. Another example was found in case 5: *"(...) they were scared to hand off control due to personal agenda's, so we included them in a "sounding board" that involved them in the process and had them voice their concerns."* Here the involvement of senior managers in a sounding board helped ensure their commitment to the implementation program.

The last cell contains an addition to the aforementioned broad business case. To ensure senior management, C-suite and board support, the business case needs to address their personal interests as well. Participant 1.2 illustrated this:

> *"The implementation program takes 6-7 years, while a board or C-suite term is generally only 2-3 years, so you need to address their (short-term) personal interests in the business case to ensure they sign off on it."*

Including the personal interests of key senior stakeholders in the business case ensures their support even if their term will end before the completion of the implementation program.

4.1.4 IT Performance Barriers

This subsection will describe all of the strategies that were used by financial services firms to deal with the barriers that fall under the 2nd order barrier construct of *IT performance*. The description will start with the strategies in the first cell below "**IT performance**" and work its way down the column from there.

This first cell restates the importance of an appropriate champion for the transformation, because a champion could ensure that there is enough priority for the project so that some of the capacity that the IT department needs to use to work for the business can be moved towards the completion of the transformation. An example of the importance of champions to obtain the relevant capacity was found in the case 4 where participant 4.1 stated that *"(...) development teams only had limited capacity and resources to work on the implementation (...)"*. When asked about these capacity issues participant 4.2 replied: *"My product owner definitely was a champion for the process as he did his best to obtain the necessary priority to assign our team the capacity we needed to complete the implementation."* This champion made it much easier for that team to obtain more capacity to work on the implementation compared to other teams at the same firm.

The cell below contains a strategy that was already discussed in the first column, the standardization of processes. This strategy was also included in this cell, because the change in the firm's culture that follows from the change described in section 4.1.2 will improve the performance of the IT department with respect to the implementation program. Another barrier that was mentioned often to the implementation of data governance was the low level of data quality. Cases 2 and 4 dealt with this barrier by simply circumventing the bad quality data. This was possible because most bad quality data was due to the data being manipulated somewhere in its journey away from the source. According to participant 4.2 case 4 *"(...) implemented a golden source program, so that anytime anyone was in doubt about the quality of the data they had received, they could refer to the list of golden source to see how they could obtain the source data."* Case 2 also set up an initiative to improve the quality of all data. According to participant 2.1 this was done by *"(...) analyzing the lineage of a particular data element. How did it go from the source, through multiple processing operations, to the central repository."* By tracking the data lineage, data quality can be monitored continuously and thus any barriers caused by insufficient data quality can be dealt with.

The third cell again contains the strategy of involving the stakeholders in the design process. This involvement works in two directions. According to participant 6.1:

> *"Since the IT team is very much focused on innovation and the risk and regulatory team is very much focused on risk and compliance, we had them sit together to reach an understanding of what they thought was critical. This way the IT team can make sure the risk team trusts their design and implementation."*

Therefore, through having the IT department stakeholders sit together with other stakeholders, they can come to an understanding of what needs to happen.

The last cell contains a strategy that was added by the focus group. They were asked to what they think would be a proper strategy to navigate any IT performance-related barriers through the use of a business case. The focus group responded by saying that personnel needed to be included in the business case in two ways. Firstly, the business case should include the costs of hiring capable personnel, but also include the indirect benefits of hiring skilled employees. The business case should also include incentive schemes that stimulate the employees for hitting implementation targets, for example when a team completes one of the steps from Ladley (2020b). This way, when the business case is realized, employees are stimulated to increase their performance metrics and thus increasing IT performance.

4.1.5 Lack of Information Barriers

This subsection will describe all of the strategies that were used by financial services firms to deal with the barriers that fall under the 2nd order barrier construct of *Lack of information*. The description will start with the strategies in the first cell below "**Lack of information**" and work its way down the column from there.

The first cell contains only a strategy that was introduced by the focus group interview: making sure the vision on the implementation from senior management is clear in such a way that it limits the emergence of misunderstandings with regards to business definitions. According to the

focus group, this would effectively address the barrier that was found in case 2, where *"(...) the actual implementation team did not have any communication with the team high up on the corporate ladder that decides on the actual policy surrounding data within the organization."*

The next cell contains a rather simple strategy, if there is a lack of information on technologies, a simple solution is just to set up training to make sure the employees' knowledge is up to date. This is exemplified by case 6, where the risk and regulatory team had to map the bank's current data-related risk appetite onto their new data governance model. However, because this was a cloud-based model and the current model was not, re-mapping the risk was a near-impossible task for the less tech-savvy risk team. Therefore, a training was set up so that *"(...) the risk team understood the new process (...)"* (participant 6.1). This helped the firm accurately analyze their new risks through improved understanding of the technology.

The third cell contains "Avoid knowledge silos through communication", which sounds rather straightforward. Sometimes there is not a lack of knowledge within an organization, it's just that that knowledge is hidden in "silos", for example an organization's top cloud computing expert works from the office in Australia, while the head office coordinating the implementation is in the Netherlands. This is something case 6 avoided through deliberate meetings and communication. They *"(...) conducted a lot of interviews with different stakeholders."* and *"(...) waited for stakeholders to be available to sit together and reach consensus."* This way, stakeholders were able to share their knowledge and make sure as little information as possible remained hidden within the organization.

The last strategy is again the broad business case. It can be the case that immediate benefits from the implementation of new data governance policies are not abundantly clear, as evidenced by participant 2.1: *"It only costs money. You cannot use a normal calculation model to determine the value."* However, this lack of information with respects to the costs and especially the benefits of data governance can be tackled. This was explained by participant 1.2, who said not to just include the direct costs of the implementation and any direct benefits, but also the many indirect benefits such as limiting Know-Your-Client risks (e.g. anti money laundering fines), increased capabilities of creating value from data and improved customer experience due to standardized systems of records. This helps collect the necessary information to properly understand the business case of implementing new data governance policies.

4.2 Barriers

Following this description of the contents and context of table 4.1, the following sections 4.2 and 4.3 will provide some more context to tables 3.3 and 3.5 respectively from chapter 3.

The first 2nd order construct that is mentioned in table 3.3 is *Organizational culture/structure* which means that the barriers in that category can be found in the organizational culture or structure of the company. This can be seen in table 3.3 by looking at the 1st order constructs that are grouped in it. For example, if there is a restrictive mindset towards change within a company, that might mean their employees are dragging their feet while implementing the change, or outright sabotaging it. Another example is overzealous risk management which was found in case 2, about which participant 2.2 said: *"Endless quality control checks led to enormous delays. These checks were not even necessary since external controls existed to ensure the involved risks remained within the company's*

risk appetite."

Secondly, the barriers under *Senior management priority* concern themselves with obstacles that are due to the lack of priority given to the change by senior management. For example, if senior management does not assign enough resources to the implementation, the implementation team will suffer from a lack of time and financial resources to do the implementation, next to their regular work for the business. According to participant 4.1, *"The development team's received their priorities from business stakeholders, however if these teams would say "sorry we don't have the capacity due to the implementation program", that would make the business stakeholders very nervous."* However, on the other hand, if the business stakeholders get their way, the implementation program would be seriously hindered due to the lack of capacity and resources.

Next the *IT performance* constructs are split into the performance of the IT departments themselves and the performance of the infrastructure. For example, the IT department could be giving bad quality or slow work due to being understaffed or underskilled, but it could also be because the IT systems are mutually incompatible due to years of data governance neglect or the gluing together of IT systems from predecessors as the firm expanded over the years. That this acts as a barrier to data governance is illustrated by participant 1.1: *"When you give all branches complete freedom to choose their own IT systems and systems of records, it leads to complete fragmentation of data and ruining the data quality."*

Lastly, there is the *Lack of information* which is split into the lack of information on the actual technologies that are used in the transformation, the lack of information on how other parties have completed such a transformation and the lack of understanding that business definitions vary. For example, one person's idea of done is if the task they were working on was completed, while the other person's idea of done is the task being submitted to and approved by an external party, imaginably this could lead to frictions. That is something that particularly frustrated participant 2.1, as *"They did not define a definiton of "done", so when is the implementation done or completed? Since this was not discussed, at the end there were a lot of varying expectations of the result."*

4.3 Strategies

The first 2nd order construct in table 3.5 is *Senior management vision/championing* which means that the strategies that fit in that construct have to do with a vision from senior management or them acting as a sponsor or champion for the project. For example case 2, where the product owner in the team of participant 2.2 *"(...) was fighting to obtain the necessary priorities."* which helped the business stakeholders see the necessity, whereas other teams had much more difficulty obtaining these priorities.

Second, there is *Technological tools/skills* where the strategies fit that have to do with either developing technological solutions to the barrier, training/upskilling the workforce to ensure they have enough information to work on the implementation or standardizing the technologies and systems that are currently used across the firm. An example of this was in case 6, where *" (...) the engineering team did not understand risk and the risk team doesn't understand the engineering process. So we had them sit together to share their knowledge."* (participant 6.1).

Then there is *Stakeholder involvement/consensus* which stresses the importance of involving stakeholders in building up the transformation and having stakeholders sit together and agree on the elements of the transformation, especially since these were the most named strategies. A great example of this was found in case 5, where other departments within the firm were making a big fuzz about obtaining a piece of the implementation program's resources in exchange for knowledge that they had. This organizational trouble was navigated by agreeing *"(...) on a way of working together that involved making deals that everyone agreed on surrounding the work that had to be done."*

The last construct is the *Business case* which has only one 1st order construct under it: *Build a broad business case*. Participant 2.1 said *"it is impossible to make a business case for data governance, it only costs money."*. However, the six participants who named the business case as one of the strategies they used to help implement new data governance, or convince an organization that they needed to implement new data governance, said that it is necessary to look at the business case in a very broad sense. They advised to not only look at direct benefits, like avoiding Know-Your-Client (KYC) risks, but also to possible innovation avenues that will make new revenue or to improved customer experience which can lead to attracting new clients.

This results chapter examined the challenges and strategies involved in the implementation of data governance within Dutch financial services. Through an exploration of the symbiotic relationships between 2nd order barrier and strategy constructs, as depicted in Table 4.1, the interplay of these factors was unveiled. Strategies, ranging from senior management involvement to technological solutions, stakeholder engagement, and broad business cases, were discussed. The chapter elaborated on specific 2nd order barriers, including organizational culture/structure, senior management priority, IT performance, and lack of information. This analysis sets the stage for the next chapter, providing a foundation to interpret the findings and their implications for the implementation of data governance at financial services firms.

Chapter 5

Discussion

After describing the results in the previous chapter, this chapter will place the results in a context of existing literature and provide an outlook to the future for data governance implementation at financial services firms and for future research.

5.1 Barriers & Strategies

The goal of the research was to determine how strategies managers at financial services in the Netherlands use to successfully implement new data governance. This lead to "How do managers at financial services firms in the Netherlands deal with barriers to successfully implement new data governance?" as the research question of this thesis.

Table 4.1 presented the strategies that were used to deal with the barriers to the implementation of data governance in the six cases. These strategies were sorted into four broad 2nd order constructs that had emerged naturally from the interview data. These four constructs are "Senior management vision/championing", "Technological tools/skills", "Stakeholder involvement/consensus" and "Business case". The specific strategies from these broader categories were named in the cell to the table and chapter 4 described how they dealt with the barriers. These barriers were also divided into four broad 2nd order constructs: "Organizational culture/structure", "Senior management priority", "IT performance" and " Lack of information" which, contrary to the strategies, had been developed from barriers found in literature.

All eighteen barriers that were identified in the individual interviews fit under the umbrella of barriers that had already been found in literature by Drew (1995), Morabito (2015) and Das et al. (2018). Of these three papers, only Morabito (2015) actually studied data governance, Drew (1995) and Das et al. (2018) studied implementing innovation at financial services firms. Therefore, the assumption that this thesis made that, in case of financial services firms, data governance implementation suffers the same barriers as innovation implementation holds is supported by the interview data.

When taking a look at the strategies from table 4.1, it stands out that, in accordance with D'Este et al. (2012), all of the strategies address work on the micro-level. They deal with the barriers by addressing individual concerns of those resistant to the change. When looking at the individual strategies, they bear quite some resemblance to the specific strategies to deal with innovation

barriers found in literature (Sandberg and Aarikka-Stenroos (2014), Meijer (2015) and Parris et al. (2016)). This is further corroborated by the 2nd order constructs that emerged naturally from the specific strategies in table 3.5. Out of the four 2nd order constructs, three have significant overlap with one, or more, of the four root causes for innovation effectiveness as found by Loewe and Dominiquini (2006) displayed in figure 2.2. *Senior management vision/championing* has a lot of overlap with *Leadership & Organization* from Loewe and Dominiquini (2006), *Technological tools/skills* has overlap with *Processes & Tools* and *People & Skills* and *Stakeholder involvement/consensus* has considerable overlap with *Culture & Values*. Therefore, the assumption about the barriers can be stretched even further to say that to deal with the barriers to data governance implementation, financial services firms make use of strategies that have been described in literature as strategies to deal with barriers to innovation implementation.

The only 2nd order construct of strategy that does not have any overlap with the root causes from Loewe and Dominiquini (2006) is the *Business case*. However, it does bear quite a striking resemblance to the proposal strategy from Parris et al. (2016) and demonstrating the ROI from Meijer (2015) which they name as a way of obtaining organizational support. However, the business case strategy, as described in this research, is much more broad than merely demonstrating the ROI. It could even prove to be impossible to demonstrate positive ROI for a data governance implementation project, as one interviewee put it: *"Data governance does nothing but cost money, it does not cause any direct income."* Admittedly, the proposal approach from Parris et al. (2016) is more broad (it should *"cover all details"*) than just the ROI, however, their description is also quite brief and vague and includes that the entire proposal must be able to be delivered in a short elevator speech. This is quite different from the broad business case as presented in this thesis. The broad business case is described as not just a simple cost and benefit analysis, it must include all risks, from KYC risks such as Anti-Money Laundering (AML) fines, to cyber security risks, all benefits from improved customer experiences to enabling digital transformations. It must also cover as many interests of board members as possible, to make sure that they support the implementation during their terms on the board. By covering all these personal interests, the "elevator pitch" can also be adjusted for each board member or senior manager so that it strikes the right chords for each and every one of them. This way, a data governance implementation team can ensure the *Senior management priority*, which was the most often mentioned barrier across all individual interviews.

There are also several strategies that address multiple categories of barriers at once. A perfect example is the *Business case*, developing a broad enough business case would aid in navigating all four categories of barriers. Another example is the importance of appropriate champions and sponsors for the implementation process. A champion or sponsor with a vision high-up in the organization can make a huge difference by ensuring priority and communicating the strategy clearly to the entire organization. This also works the other way around, if the person who is supposed to champion the process does not believe in the vision, this person might accidentally, or on purpose, become an anti-champion (Land (2018)) and start sabotaging the implementation process. Thus a senior manager at a financial services firm should think carefully about selecting a proper champion to lead the implementation process and this senior manager should also be aware of the role they could play as a sponsor to this project. However, they should not get too high up that horse since change works both ways, it needs to be both top-down and bottom-up. For a change to happen, it must be supported by stakeholders from the bottom to the top. Therefore involving stakeholders by asking about their needs and wishes and seeing what management can do for them as well as what they can do for the management is essential to a successful implementation process.

These three strategies (the broad business case, the selection of an appropriate champion and involving all stakeholders) are the strategies that stand out most from all of the interviews and were confirmed to be essential strategies in the focus group. All cases had selected a champion for the project, even if not all of them were appropriate. However, for the other two strategies, every single case had trouble applying this strategy on their own and had hired PwC, who came up with the strategy. Therefore, these strategies are something financial services firms could focus on to be able to streamline their data governance implementation processes.

5.2 Practical Implications

Based on the brainstorming session at the end of the focus group interview several practical implications had been found. The first practical implication was already mentioned above, one of the focus group participants who realized their current project did not focus enough on the risk side of the process. However, this was not the only point of action that was discussed. The importance of the broad business case and the difference a champion or sponsor can make that were found in the individual interviews, led the focus group participants to discuss the need for external sponsors. They felt that sponsorship from within the organization was often not enough and that things would move forward at a much faster pace if external sponsors were involved. Examples of external sponsors that were named were the Dutch Central Bank and the Dutch Authority on Financial Markets. They could help financial services firms by stressing the importance of regulatory compliance, for example with BCBS 239, and the AML fines they risk if money launderers are discovered as customers of the firm because do not have their (customer) data under control.

Another practical implication was what PwC could do with the results to help their "sales approach". This did not mean the focus group participants wanted to start using this thesis as a sales pitch, however they did say these results could be a basis to develop a data governance maturity model. This model would consist of all of the barriers that inhibit the implementation of data governance, the strategies that need to be used to deal with these barriers and a diagnostic questionnaire. This questionnaire would then have to be filled in by the client (the financial services firm) and the result of the questionnaire would place them somewhere in the model and provide a quick scan of what would need to happen to complete the implementation. This would allow PwC to quickly assess the necessary resources to complete this project and not spend as much resources on project orientation. Additionally this model would move the implementation process from an ad-hoc approach to a more holistic approach to change.

The third practical implication dives somewhat deeper into the business case. Since all focus group participants had recognized the importance of a broad business case, they discussed on how they could include the results of the individual interviews into a data governance implementation business case offering. They found that there were some elements of the interview results that were relevant for building a broad business case. This included the importance of a clear company-wide data governance vision in the business case, the costs of training personnel or hiring trained personnel and the costs and benefits of a proper data infrastructure. They also suggested widening the scope to industries that deal with similar data governance issues such as the telecom and utilities industries.

The last practical implications regards the final paragraph of section 5.1, the three essential strategies: the broad business case, the selection of an appropriate champion or sponsor and the involve-

ment of all stakeholders. While the financial services firms studied in this thesis all have selected champions for their projects, some of them were not appropriate and thus it is recommended that they spend more consideration towards who they put forward as the champion of a project. More strikingly, however, none of the financial services firms that were studied in this thesis put forward the broad business case and involving all stakeholders strategies by themselves, all of them required the help from PwC to think of and apply this strategy. Therefore, relevant managers at financial services firms should consider implementing these strategies themselves which would save them the resources they otherwise would have spent on an external consultancy firm. Furthermore, not having to involve an external consultancy firm would save the financial services firm from suffering from the Not-Invented-Here syndrome, which Katz and Allen (1982) defines as "the tendency of a project group of stable composition to believe it possesses a monopoly of knowledge of its field, which leads it to reject new ideas from outsiders to the likely detriment of its performance", i.e. the rejection of new ideas from an outsider purely because they are an outsider. This syndrome was mentioned by participants 2.1 and 5.2 to have hindered the progress on their projects, further stressing the importance that financial services firms either apply these strategies themselves or, if that is not possible, create an internal environment that is more open to outside ideas.

5.3 Limitations and Recommendations for Future Research

While this thesis has provided valuable insights into the data governance implementation process at financial services firms in the Netherlands, it is essential to recognize and address the four main limitations that may impact the interpretation of these findings.

The first limitation regards the composition of the interview sample, all interview respondents were PwC employees. This composition was chosen to ensure that the interview respondents offered a more neutral and objective viewpoints compared to internal employees. However, this could lead to a bias in the results as PwC has a certain way of working, its "best practices". An example of this is that participant 6.1 commented that they had acted *"(...) according to PwC best practices(...)"* in dealing with the barriers they encountered. Therefore, it is recommended that the study is repeated with internal employees of financial services firms that did not work with PwC, or another consulting firm, and the results are compared and contrasted with those obtained from this thesis to eliminate the influence of the PwC best practices.

Secondly, the composition of the focus group could have had influence on the results. More junior employees might have felt hesitant to provide candid responses due to the presence of one or more superiors, especially when these superiors have only recently joined the team. This dynamic can contribute to an uncomfortable atmosphere, as employees may fear being judged, leading to a hesitancy in expressing their true thoughts and opinions. This could lead to them withholding valuable information that could have enriched the results of this research. Therefore it is recommended that future research conducts multiple focus group interviews, as this could allow dividing the focus groups so that there is a focus group for each level of seniority. This would allow especially junior employees to feel like they can speak more freely and could help avoid the conversation being dominated by the most senior employee present.

The third limitation concerns itself with the retrospective nature of the research. This approach may have affected the results due to recall bias. An example that illustrates possible recall bias in the

other cases are the interviews of case 2. Case 2 had only been completed a few days before the first individual interviewed. This might be the reason that the interviews about case 2 provided much richer information than for example case 5, which was completed three years ago. Therefore, to avoid recall bias, it is advised that future research looks at an ongoing implementation process, from start to finish and collect and analyze barriers and strategies as they are encountered and employed.

The fourth and final main limitation is the composition of the case selection. All six cases were projects at financial services firms done by PwC, therefore the composition is quite which is good for "literal replication" (Yin (2009)). However, that means that there are no real contrasting cases for "theoretical replication". Therefore, to be able to obtain theoretical replication, it is recommended that future research selects cases that are expected to have contrasting results from the ones selected in this thesis, this includes cases from other financial services firms who have completed data governance implementations without the help of external consultancy firms and/or firms in other sectors such as the telecom and utilities sectors. This would allow for greater support of the findings of this thesis according to Yin (2009).

Analyzing an ongoing process also offers another interesting research opportunity, due to the close look the researcher gets at the actual process. This way future research can identify possible temporal or process dependencies in the barriers that are encountered and the strategies that are used to deal with them, which this thesis fails to take into account. When the interview participants were asked to describe the timeline of their project, every single participant responded with the same answer. They first collected information to analyze the current situation, then they determined what the ideal situation needed to be and proceeded to make a plan on how to get their and executed that plan. This is not a coincidence, because all participants acted according to the PwC best practices. Therefore, it is recommended that if one wants to analyze the temporal aspect, that they also include the internal point-of-view in order to be able to compare and contrast both points-of-view.

Chapter 6

Conclusions

The goal of this research was to identify the barriers financial services firms face when implementing new data governance and the strategies they use to successfully implement data governance. This was done through twelve individual interviews and a focus group interview. These interviews were then analyzed and compared to each other and to literature to provide an answer to the following sub-questions.

What does a successful implementation of data governance mean?

There are five steps to the implementation of data governance: engagement; strategy; architecture and design; implementation; and operation and changes. However, since data governance is a continuous effort with no clear beginning or ending, data governance was defined to be successfully implemented when the creator, consumer and governor of the data agree that an acceptable balance of value of data has been achieved.

What are the barriers that financial services firms in the Netherlands encounter when attempting to implement new data governance?

During the individual interviews, fourteen different barriers to the implementation of data governance at financial services firms were mentioned and they were consequently sorted into four different categories: *Organizational culture/structure*, *Senior management priority*, *IT performance* and *Lack of information*. All of these fourteen barriers had previously been described in literature, most of them as barriers to innovation at financial services firms. This leads the answer to this subquestion to be that financial services firms face the same barriers to implementing data governance as they would to implementing innovation and that these barriers can be sorted into the following four categories: *Organizational culture/structure*, *Senior management priority*, *IT performance* and *Lack of information*.

What strategies do managers at financial services firms in the Netherlands employ to deal with barriers to data governance?

The individual interviews identified a list of nine unique strategies that managers at financial services firms employed to address the barriers discussed above. These nine strategies were then grouped into four broad categories as well: *Senior management vision/championing*, *Technological tools/skills*,

Stakeholder involvement/consensus and the *Business case*. The first three of these four categories showed considerable overlap with strategies that had been found in literature for addressing barriers to implementing innovation, further enforcing the aforementioned claim that financial services firms face the same barriers to data governance implementation as they do to innovation. Furthermore, the fourth category the *Business case* was found to be more inclusive than its counterpart that was found in literature. It includes direct costs and benefits as well as all possible risks and personal interests of stakeholders. Some of these strategies were even used to deal with multiple barriers at once. Prominent examples are the aforementioned broad business case, the selection of a suitable sponsor and/or champion of the project and the involvement of stakeholders in the process. Therefore, the answer to this sub-question is that financial services firms mostly use the same strategies to address barriers to data governance implementation as they would for innovation implementation. Additionally, there is special attention for the importance of selecting a suitable sponsor and/or champion for the project, involvement of stakeholders and developing a broad business case to convince the entire organization of the project's importance as these strategies proved to be essential to the implementation process.

However, this does not do justice to the complexities of this research problem. Yes, for each barrier that was encountered in the six different cases there was a suitable strategy to help navigate that barrier, but that does not mean the problem is solved. Since none of the firms that were studied applied two of the three essential strategies of their own accord, it points to a lack of openness towards innovation implementation at these financial services firms, which is further reinforced by the experience of two of the participants of the interviews who felt that there was some form of resistance from the firm due to the Not-Invented-Here syndrome. Considering that there is a strategy to navigate every barrier and that there are still difficulties in the implementation, that points to a deficiency in the general implementation approach by the firms. They tend to deal with barriers as they come up, instead of taking a holistic approach towards the implementation, seeing things from a broader perspective and creating an environment that encourages innovation and change instead of resisting. This holistic approach would also align more with the approach Karkošková (2022) took in the design and implementation of their Data Governance Model, confirming that this approach could be suitable to more financial services firms than just the specific firm they studied.

The answers to these sub-questions help answering the main research question which was:

How do managers at financial services firms in the Netherlands deal with barriers to successfully implement new data governance?

The strategies that managers at financial services firms in the Netherlands use to deal with the barriers to successfully implementing new data governance are largely the same strategies as they would, or should, use to address the barriers to innovation. However, three essential strategies were emphasized by the individual and focus group interviews. Firstly, no change is happening without the support from all of the stakeholders and to ensure their support, managers that help successfully implement data governance involve the stakeholders, their needs and their wishes in the implementation process. Secondly, these managers develop broad business cases that covers all direct and indirect costs and benefits, risks and personal interests of senior executives. Lastly, they find, or are, an appropriate sponsor and/or champion for the implementation process to obtain the necessary priority, develop a vision on data governance and convince the rest of the organization of the importance of data governance. This helps keep the two main influencing factors in the decision-making process, money and personal interests, in favor of progressing with the implementation process.

The results of this research can be used by financial services firms to evaluate their current and future data governance implementation processes and to develop a data governance implementation model with barriers and the corresponding strategies. They can then use this, along with a diagnostic questionnaire, to streamline their data governance implementation processes to be prepared for any future data governance implementations. This would allow financial services firms to develop a more holistic approach to the implementation of data governance. This improvement in the data governance of financial services firms could lead to more trust in financial services firms and thus to a more stable and robust financial system. Additionally, this thesis contributes to literature by showing that, for financial services firms, there is no need to think differently about barriers to the implementation of data governance, and the strategies to navigate them, and the barriers to the implementation of innovation, and the strategies to navigate those.

References

Abraham, R., Schneider, J., & vom Brocke, J. (2019). Data governance: A conceptual framework, structured review, and research agenda. *International Journal of Information Management*, *49*, 424-438. Retrieved from https://www.sciencedirect.com/science/article/pii/S0268401219300787 doi: https://doi.org/10.1016/j.ijinfomgt.2019.07.008

Albrecht, J. P. (2016). How the gdpr will change the world. *Eur. Data Prot. L. Rev.*, *2*, 287.

Al-Ruithe, M., & Benkhelifa, E. (2017). Analysis and classification of barriers and critical success factors for implementing a cloud data governance strategy. *Procedia Computer Science*, *113*, 223–232. doi: 10.1016/j.procs.2017.08.352

Andriosopoulos, D., Doumpos, M., Pardalos, P. M., & Zopounidis, C. (2019). Computational approaches and data analytics in financial services: A literature review. *Journal of the Operational Research Society*, 1-19. doi: 10.1080/01605682.2019.1595193

Barriball, K. L., & While, A. (1994). Collecting data using a semi-structured interview: a discussion paper. *Journal of Advanced Nursing-Institutional Subscription*, *19*(2), 328–335.

Basel Committee on Banking Supervision. (2013). *Bcbs 239: Principles for effective risk data aggregation and risk reporting.* https://www.bis.org/publ/bcbs239.pdf.

Basel Committee on Banking Supervision. (2020). *Progress in adopting the principles for effective risk data aggregation and risk reporting.* https://www.bis.org/bcbs/publ/d501.pdf.

Bronnenmayer, M., Wirtz, B. W., & Göttel, V. (2016). Determinants of perceived success in management consulting: An empirical investigation from the consultant perspective. *Management Research Review*, *39*(6), 706-738.

Cordeiro, A. S., & Vieira, F. D. (2012). Barriers to innovation in smes: An international comparison. *II Conferência Internacional de Integração do Design, Engenharia e Gestão para a inovação*.

Das, P., Verburg, R., Verbraeck, A., & Bonebakker, L. (2018, Jan). Barriers to innovation within large financial services firms. *European Journal of Innovation Management*, *21*(1), 96–112. doi: 10.1108/ejim-03-2017-0028

Drew, S. A. (1995). Accelerating innovation in financial services. *Long Range Planning*, *28*(4), 1-21. Retrieved from https://www.sciencedirect.com/science/article/pii/002463019500031D doi: https://doi.org/10.1016/0024-6301(95)00031-D

Dutch Central Bank. (n.d.). *Everything you should know about PSD2.* Retrieved from https://www.dnb.nl/en/innovations-in-payments-and-banking/fintech-ai-and-innovation/everything-you-should-know-about-psd2/

Dutch Department of Social Affairs. (2023, Jun). *Wet toekomst pensioenen aangenomen.* Ministerie van Algemene Zaken. Retrieved from https://www.rijksoverheid.nl/actueel/nieuws/2023/05/30/wet-toekomst-pensioenen-aangenomen

D'Este, P., Iammarino, S., Savona, M., & Von Tunzelmann, N. (2012). What hampers innovation? revealed barriers versus deterring barriers. *Research policy*, *41*(2), 482–488.

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and

challenges. *Academy of Management Journal*, *50*(1), 25-32.

European Data Protection Board. (2023, May). Retrieved from https://edpb.europa.eu/our-work-tools/our-documents/binding-decision-board-art-65/binding-decision-12023-dispute-submitted_en

Frey, J. H., & Fontana, A. (1991). The group interview in social research. *The Social Science Journal*, *28*(2), 175-187. Retrieved from https://www.sciencedirect.com/science/article/pii/036233199190003M doi: https://doi.org/10.1016/0362-3319(91)90003-M

Future of Life Institute. (2023, Apr). *The EU AI Act.* Retrieved from https://artificialintelligenceact.eu/

George, T. (2023, Jun). Semi-structured interview — definition, guide & examples. *Scribbr*. Retrieved from https://www.scribbr.com/methodology/semi-structured-interview/

Humby, C. (2006). Data is the new oil. In *Proceedings of ana sr. marketer's summit* (p. 1). Evanston, IL, USA.

Hunziker, S., & Blankenagel, M. (2021). Multiple case research design. *Research Design in Business and Management: A Practical Guide for Students and Researchers*, 171–186.

Janssen, M., Brous, P., Estevez, E., Barbosa, L. S., & Janowski, T. (2020). Data governance: Organizing data for trustworthy artificial intelligence. *Government Information Quarterly*, *37*(3), 101493.

Janssen, M., & Van Der Voort, H. (2016). Adaptive governance: Towards a stable, accountable and responsive government. *Government Information Quarterly*, *33*(1), 1–5.

Karkošková, S. (2022, Mar). Data governance model to enhance data quality in financial institutions. *Information Systems Management*, *40*(1), 90–110. doi: 10.1080/10580530.2022.2042628

Katz, R., & Allen, T. J. (1982). Investigating the not invented here (nih) syndrome: A look at the performance, tenure, and communication patterns of 50 r & d project groups. *R&D Management*, *12*(1), 7-20. doi: 10.1111/j.1467-9310.1982.tb00478.x

Khatri, V., & Brown, C. V. (2010). Designing data governance. *Communications of the ACM*, *53*(1), 148–152.

Kooper, M., Maes, R., & Lindgreen, E. R. (2011). On the governance of information: Introducing a new concept of governance to support the management of information. *International Journal of Information Management*, *31*(3), 195-200. Retrieved from https://www.sciencedirect.com/science/article/pii/S0268401210000708 doi: https://doi.org/10.1016/j.ijinfomgt.2010.05.009

KPMG Sofy Suite. (n.d.). KPMG. Retrieved from https://www.kpmgsofy.com/blog/data-management/6-tips-for-successful-data-governance/

Ladley, J. (2020a). Chapter 3 - data literacy and concepts. In J. Ladley (Ed.), *Data governance (second edition)* (Second Edition ed., p. 15-31). Academic Press. Retrieved from https://www.sciencedirect.com/science/article/pii/B9780128158319000035 doi: https://doi.org/10.1016/B978-0-12-815831-9.00003-5

Ladley, J. (2020b). Chapter 6 - overview of data governance development and deployment. In J. Ladley (Ed.), *Data governance (second edition)* (Second Edition ed., p. 61-80). Academic Press. Retrieved from https://www.sciencedirect.com/science/article/pii/B9780128158319000060 doi: https://doi.org/10.1016/B978-0-12-815831-9.00006-0

Ladley, J. (2020c). Chapter 9 - architecture and design. In J. Ladley (Ed.), *Data governance (second edition)* (Second Edition ed., p. 141-185). Academic Press. Retrieved from https://www.sciencedirect.com/science/article/pii/B9780128158319000096 doi: https://doi.org/10.1016/B978-0-12-815831-9.00009-6

Land, F. (2018). The management of change: Guidelines for the successful implementation of information systems. In *Computer-supported cooperative work* (p. 273).

Larsson, A., Andersson, N., Markowski, P., Nilsson, M., & Mayor, I. (2019). Consulting in the digital era?: The role of tomorrow's management consultants. In *The digital transformation of labor* (p. 257-261). Routledge.

Loewe, P., & Dominiquini, J. (2006). Overcoming the barriers to effective innovation. *Strategy & Leadership*, *34*(1), 24-31.

Meijer, A. (2015). E-governance innovation: Barriers and strategies. *Government Information Quarterly*, *32*(2), 198-206. Retrieved from https://www.sciencedirect.com/science/article/pii/S0740624X15000192 doi: https://doi.org/10.1016/j.giq.2015.01.001

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.

Morabito, V. (2015). Big data governance. In *Big data and analytics: Strategic and organizational impacts* (pp. 83–104). Cham: Springer International Publishing. Retrieved from https://doi.org/10.1007/978-3-319-10665-6_5 doi: 10.1007/978-3-319-10665-6_5

Orgeldinger, J. (2018). The implementation of basel committee bcbs 239: Short analysis of the new rules for data management. *Journal of Central Banking Theory and Practice*, *7*(3), 57–72. Retrieved from https://doi.org/10.2478/jcbtp-2018-0023 doi: doi:10.2478/jcbtp-2018-0023

Parris, D. L., Bouchet, A., Welty Peachey, J., & Arnold, D. (2016). Change is hard: Overcoming barriers to service innovation. *Journal of Services Marketing*, *30*(6), 615–629.

Runte, C., & Kamps, M. (2023, May). CMS International law firm. Retrieved from https://cms.law/en/int/publication/gdpr-enforcement-tracker-report

Sandberg, B., & Aarikka-Stenroos, L. (2014). What makes it so difficult? a systematic review on barriers to radical innovation. *Industrial Marketing Management*, *43*(8), 1293-1305. Retrieved from https://www.sciencedirect.com/science/article/pii/S0019850114001400 doi: https://doi.org/10.1016/j.indmarman.2014.08.003

Stempel, J., & Finkle, J. (2017, Oct). Yahoo says all three billion accounts hacked in 2013 data theft. *Reuters*. Retrieved from https://www.reuters.com/article/us-yahoo-cyber/yahoo-says-all-three-billion-accounts-hacked-in-2013-data-theft-idUSKCN1C82O1/

Stulp, F., Demneri, A., & Munnik, R. (2023, Apr). *Leveraging on effective data governance.* Deloitte. Retrieved from https://www2.deloitte.com/nl/nl/pages/risk/articles/leveraging-on-effective-data-governance.html

Tankard, C. (2016). What the gdpr means for businesses. *Network Security*, *2016*(6), 5-8. Retrieved from https://www.sciencedirect.com/science/article/pii/S1353485816300563 doi: https://doi.org/10.1016/S1353-4858(16)30056-3

Taylor, P. (2021, Jun). *Data growth worldwide 2010-2025.* Retrieved from https://www.statista.com/statistics/871513/worldwide-data-created/

The Economist. (2017). The world's most valuable resource is no longer oil, but data. *The Economist*. Retrieved from https://www.economist.com/news/leaders/21721656-data-economy-demands-new-approach-antitrust-rules-worlds-most-valuable-resource (6 May)

Von Soest, C. (2023). Why do we speak to experts? reviving the strength of the expert interview method. *Perspectives on Politics*, *21*(1), 277–287.

Weber, K., Otto, B., & Österle, H. (2009, jun). One size does not fit all—a contingency approach to data governance. *J. Data and Information Quality*, *1*(1). Retrieved from https://doi.org/10.1145/1515693.1515696 doi: 10.1145/1515693.1515696

Yin, R. K. (2009). *Case study research: Design and methods* (Vol. 5). sage.

Appendix A

Interview Guide

A.1 Introduction

Thank the participant for agreeing to take part in the research. Ask permission to record the interview (either through MS Teams or with phone). Agree on level of confidentiality. State that if they feel uncomfortable answering certain questions, they are not required to answer them. Briefly explain the purpose of the research and its importance in understanding how financial services firms navigate barriers to innovation implementation and in particular the implementation of data governance. Explain which project this interview is about to help remind the participant.

A.2 Background and Context

1. Could you please tell me what your role and responsibilities were within the [insert project name here], in particular in relation to the implementation of data governance and the transition to [project detail]?
2. How long did the process of implementing new data governance during the transition to Cloud computing take in your organization? Could you briefly describe the key objectives and motivations behind this initiative?

A.3 Process

3. To make the process a little more clear, could you take me through it step by step and help me sketch out a timeline of the process, including the barriers or challenges you encountered and the strategies used to deal with them.
   (a) What significant barriers or challenges did you and your team encounter?

(b) What strategies and approaches did you adopt to address these barriers? Were there any specific measures or actions taken to overcome these barriers?

(c) In retrospect, do you think that any of the strategies employed were particularly effective or ineffective in dealing with barriers? If so, could you explain why? (Maybe something to classify the strategies to change management models, Meijer (2015) strategies or Loewe and Dominiquini (2006) strategies)

A.4 Lessons Learned and Recommendations

4. Based on your experience, what are the key lessons learned from the data governance implementation process during the transition to Cloud computing? Are there any insights or best practices that you would recommend to other financial services firms undergoing similar initiatives?

   (a) Looking back, are there any specific changes or improvements that you would have done differently if you were to start the process again to enhance the data governance implementation or address barriers more effectively?

5. How would you rate the success of this project? What measures do you use for the successfulness of the project?

A.5 Conclusion

6. Give the participant time to ask me any questions they might have. Thank the participant for their valuable insights and time. Offer an opportunity for them to provide any additional comments or share anything they believe is important for the research. Repeat that I would like to report their experience as part of my research. Ensure that I have clarity about their consent that their responses will be used as a part of this research. Ask whether they would like to stay updated on the status of the research and if they would like to receive a copy of the thesis when it is done.

Appendix B

Focus Group Results

Figure B.1: The Mentimeter word cloud that was generated from the responses of the focus group to the question of what they thought of the results of the individual interviews, particularly with respect to table 4.1. *"Broader tom ch"* stands for "broader target operating model change"