

Risk consideration during digital innovation at a commercial bank

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Mini-dissertation submitted in partial fulfilment of the requirements for the degree *Master of Commerce in Applied Risk Management* at the North-West University

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NOTES TO EXAMINERS

- The mini-dissertation should demonstrate that the student has the ability to:
 - Do research
 - Constructively criticise own and others' research
 - Report the research results clearly, accurately and concisely with enough information to allow others to evaluate, and perform a similar study, should they wish to do so.
- This study represents the student's learning during a nine-month research project at master's degree level. It is therefore not necessary that the results represent a substantial contribution to the academic knowledge of the field.
- The mini-dissertation was written in article format and consists of three sections: Research project overview, Article and Reflection. The focus of the mini-dissertation is on the article written by the student.
- The research project overview section should provide a high-level introduction to the research project that adequately prepares the reader to understand how the study fit into the Centre for Applied Risk Management (UARM)'s research projects.
- The potential journal selected by the student is intended as an academic learning experience for the student. If suitable, a reworked version of the article may be submitted to the selected journal post examination.
- The reflection section should provide a critical evaluation of the study, and also gives the student the opportunity to reflect on her/his personal learning during the project.
- The student should provide a study-specific summary of the literature related to the specific study in the article and is not expected to provide a separate section containing a risk culture literature review in the mini-dissertation, as this has been covered and assessed as part of the examined assignment for the Behavioural Risk Management module that forms part of this master's degree.
- The maximum word count for the article is 8000 words. This maximum word count includes words used in tables and figures, and excludes the article abstract, references and appendices. The maximum word count for the abstract is 300.
- The additional information in the appendices should be considered when evaluating the content of the three main sections of the dissertation.
- The role of the supervisors was to provide guidance and assistance on project conceptualisation, data analysis, interpretation and writing skills. The student carried the major responsibility for conceptualising, setting up, executing, and writing up the research project.
- Turnitin was used to assist with plagiarism checking before the student was allowed to submit for examination.

PREFACE

This mini-dissertation is the final deliverable for the Master of Commerce (MCom) in Applied Risk Management. The mini-dissertation was written in article format and consists of three sections: Research project overview; Article; and Reflection.

This mini-dissertation is the student's work. The student was responsible for the final concept, set up, execution of the research project and writing of the mini-dissertation. The members of the supervisory team contributed in an advisory and technical support capacity to the study's conception and design, analysis and interpretation of data, and critical revision of the manuscript. The mini-dissertation was language edited before submission for examination. However, the student is responsible for doing these edits, and for the grammatical correctness of the document before hand-in.

The main study supervisor gave the student permission to submit this mini-dissertation for examination.

ABSTRACT

Note: Article abstract will be inserted here in the final post-examination version of the mini-dissertation. See abstract in article for examination purposes.

ACKNOWLEDGEMENTS

“It takes a village!”. Truer words have not been spoken in the context of academic studies. I have a great deal of gratitude to a great many people who have motivated me and kept me going over a demanding stretch of 24 months.

I would like first to thank the Lord, for this opportunity, for blessing me beyond what I deserve and being my strength through every challenge. My eternal gratitude to my supervisor, Eddie Lindeque, who was my north star, and guiding light. Thank you, Eddie, for keeping me on the right track, and for putting in as much, if not more work than I have. I consider myself a mentor and friend richer after these two years. A great big thank you to Professor Hermien Zaaiman, my co-supervisor, for your constant motivation, and enthusiasm about this study – you gave me a boost at just the right time! Thank you to my newly “crowned” husband, Jacques, thank you for “sharing” me with this research, thank you for reminding me how privileged I am, thank you for being the most beautiful soul, and thank you for being you. Your support has made this possible. Thank you to my parents, Fanie and Charmaine Steyn, they made this possible – your years of dedication to your children, making sure I was never in want of anything, especially a first-class education, has brought me to this victory. Thank you Dr Elisabeth Lickindorf, you have taught me a great deal about academic writing, and remaining kind when the writing called for much improvement. Thank you to close family and friends who have understood my absence this year, even in the light of important life events. A big thank you to every participant in this study, and my management team Gavin, Danie and Kevin, who continually remind me how great risk management can be when leadership is dependable and understanding. Last, thank you to my classmates – we have toiled together, and now we stand at the brink, congratulations to each and every one of you!

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RESEARCH PROJECT OVERVIEW

Mid-way through my first year of this programme I switched roles from Compliance risk management to Enterprise risk management for the digital division in the subject bank. I had only been in the role for a couple of days when my new manager made the following comment:

“We are changing too quickly for ourselves – and that in itself is a risk”

This statement was so simple yet so profound, and inspired this study. I started to embed myself into one of the innovation areas, and found getting into the other a bit more difficult. Once I had gotten there, though, I saw what he meant – everything was moving at warp speed all the time. There was very little time to pause and reflect.

Our organisation had for some time set its main strategic intent to be “Digital First, 1st in Digital”. Therefore, there was tremendous drive to get the business completely digitised, not only to save on costs, but also to drive customer adoption. The innovation division, called Digital Fast Lane (DFL), was then created to ideate, to innovate and to pursue new technology, to quickly implement, so that it can be delivered. Now, being in a bank, there are extremely stringent policies and rules. Many rules are very arbitrary, many are very necessary, all of them take a lot of time to comply to. Add to this the fact that banks are heavily regulated, with a compliance function that is very risk-averse in interpreting the rules, it becomes difficult to innovate at pace. DFL has been tasked to “break the rules” of conventional banking. In some instances, this means that policies would be hard to follow, requiring dispensations, which move through multiple rounds of approvals, adding more time to the process and making it frustrating for innovators. A working methodology called Digital Implementation Framework (Digital Ways of working) (Appendix D) – a framework widely accepted and adopted in the digital division – is unknown outside these divisions. Group Level policies therefore still hold precedence, and innovators are further frustrated by this; to their minds the methodology they have adopted is their bible and they expect other Chapters to support it. The division’s targets and its methodology, may however not have taken into account the rigour of the presiding policies and frameworks, which they find cumbersome.

The Introduction, in the article that follows, sets the scene, providing a view of the changing market landscape related to the new technology, which is required for the bank to keep pace with customer needs, new entrants offering banking services, as well as the incumbent financial institutions that seem less risk averse.

The Background section frames the literature review in the light of the research questions. A Group Internal Audit (GIA) report, which was used to define the initial problem statement, is positioned. Findings from the literature review are then linked to the GIA findings. The risk-informed decision

culture (RiDC) indicator model developed by Zaaiman et al. (2021) is introduced, as it is used as a framework throughout the study.

The Method section summarises the approach taken during the study. Semi-structured interviews were conducted in the digital innovation business unit within the retail segment of one of South Africa's largest retail banks. Ethical considerations are addressed in this section, which also provides a view of the themes found in the literature, and participant feedback (Table 1).

Senior participants in the innovation lifecycle (Appendix E) were interviewed to investigate their perception of how risk was included during the digital innovation processes and what they found to be the biggest impediments from a risk management perspective. Innovators believed that the risk management process was an impediment to the innovation process.

This study shows a clear misunderstanding of risk management as a whole on the part of decision-makers in the innovation process and their responsibility to own risks in the first line of defence. It calls for the banking risk fraternity to take a long and hard look at the tools they employ to assess risk. This study makes use of the RiDC model and assists in evaluating its usefulness in practice. It was able to demonstrate how the indicators were interlinked in the innovation division of the bank, and what the implications were for the risk culture of the digital division.

Both risk culture and digital innovation are currently topical, and the target audiences below could find new insights on how these topics converge:

- Researchers interested in risk culture and risk management.
- Executive management accountable for innovation projects.
- Executive risk management, who must remain mindful of how digital innovation impacts the business risk profile.

The journal selected was the *European Journal of Innovation Management*. The journal description states that it "addresses all aspects of innovation management". This journal is where I have found the most applicable and comprehensive articles on innovation as it relates to risk management. I have also found their articles the most engaging and easiest to read in my two years of research. In the light of my reading to date, I believe that an article on risk culture during digital innovation would be the first of its kind and therefore hope that this journal would be open to publishing material from the present study. The journal's guidelines can be found on the following link:

<https://www.emeraldgrouppublishing.com/journal/ejim#author-guidelines>

Table i: Role players in the digital innovation study

#	Team Member	Role
1	Researcher	The researcher was first and foremost accountable for establishing the problem statement and determining the research aims and question.
2	Main Supervisor	Provided support and assistance throughout the process, both from a content and personal perspective; constantly ensured we remained true to the research proposal; reviewed the content for accuracy; and ensured that the feedback was correctly contextualised within the RiDC indicators.
3	Co-Supervisor	Assisted in ensuring that the initial proposal was feasible; gave advice and guidance throughout the project, detailed review of the content during writing workshops, and feedback to ensure that the document was of appropriate academic quality.
4	Editor	Advised during article writing workshops and did a pre-final grammar-only edit of the dissertation.

ARTICLE

Risk consideration during digital innovation at a commercial bank

Abstract

Banks must continually adjust their business models to include new digital technologies in response to rapidly changing customer needs, Fintech entrants, and competitors' innovative offerings. Implementation of innovative responses to these three challenges carries significant risks. While literature on digital innovation in banks and emerging risks from such innovation exists, there is very little written about the focus of this study, namely risk consideration during the innovation lifecycle. The topic is therefore relevant in the light of the changing market conditions. An adverse internal audit report of the studied bank suggested that risk-taking during digital innovation was not given adequate consideration. This report did not address the contribution of behavioural factors causing non-compliance to policy and framework requirements. To address this gap, in this study, senior managers involved in decision-making of innovation projects (innovators) were interviewed to investigate their perception of how risk management was included during the digital innovation processes. The semi-structured interview data were analysed using a risk culture indicator model to guide the coding. When prompted about challenges posed to innovation, participants raised concerns regarding the risk management framework, which was not keeping pace with industry changes. Innovators' accountability for the risk management process also emerged as an issue, because of their lack of understanding of this process. Participants seemed to choose speedy project delivery and avoidance of missed opportunities over comprehensive risk consideration, for the sake of expediency in meeting changing customer demands. Participants' recommendations for improving risk management during digital innovation included increased awareness of the risk management process. They also suggested more risk resources be assigned to address challenges identified during the study. Based on this study's results, more in-depth studies on risk management practices during digital innovation are recommended.

Key words: digital innovation, risk consideration, behavioural factors, risk culture, decision-making.

Introduction

Digital technology has become a part of everyday life, significantly shifting the way in which value is created in various fields and industries (Philbeck & Davis, 2018). Recognising that the future is digital, the financial services industry, specifically banking, has been adapting and improving its offerings through new technologies (Das et al., 2018). Although the opportunities are abundant, there are risks attached. Risk management, as a tool, can mitigate potential issues introduced by digital

innovation, but there is a perception among innovators that risk management is an inhibitor to innovation (Peretti-Watel, 2003).

Digital transformation refers to the adaptation of an organisation's business model and strategy to implement digital technology and to manage change with the customer in mind (Bowers & Khorakian, 2014). Currently, digital innovations in banking include, amongst other things, cloud computing, open finance such as application programming interfaces (APIs), artificial intelligence, and the internet of things (IoT) (Dermine, 2016; Li et al., 2017). Such changes may be disruptive to operating models, as Li et al. (2017) observe:

Technology leaders, bringing advanced new products, have greatly changed customers' expectation about how products ought to be. This expectation adjustment will compel companies to alter the present business mode and launch strategical adjustment to rise to this challenge. These adjustments may include [...] enhancing service capability.

Identifying risks and opportunities has become increasingly complex in industries where technology is developing exponentially. Whereas novelty is an appealing consequence of innovation, it unavoidably implies greater risk-taking (Bowers & Khorakian, 2014). It is therefore important to establish whether organisations involved with digital innovation are considering these risks and making changes safely.

Studies of risk management in digital innovation projects are limited and, at best, have focused on theory rather than real-world application (Ferri et al., 2021; Shrivastava & Rathod, 2017). Currently the topic of digital innovation receives the highest priority in most organisations due to the pressure to remain relevant in relation to changing customer needs, competitor responses and new entrants. New entrants can include any organisation that had not previously existed or organisations who did not traditionally offer banking products. Bearing in mind the importance of digital innovation, the risk it introduces, and the scarcity of published information on risk-taking during digital innovation projects, the aim of this study was to investigate risk consideration during digital innovation at a commercial bank. This was done by investigating what innovators, in decision-making roles, thought to be the challenges related to the risk management process as it pertained to digital innovation, how and when risk was considered during innovation projects, and how the consideration of risk could be improved in the execution of the digital innovation lifecycle.

These aspects of risk-taking behaviour were then investigated, in a bank, using semi-structured interviews with decision-makers in digital innovation projects. The present study therefore probes the under-researched field of risk management during digital innovation by financial institutions as they implement new technologies.

Four RiDC indicators emerged from the interviews with decision-makers in the innovation lifecycle. A fifth was at the root of issues raised in relation to these four indicators. Interviews highlighted a general frustration with, and lack of agility of, the prevailing risk management framework. The participant feedback was indicative of a lack of clarity of the risk role, which contributed to their lack of understanding of the risk function and its true value. The researcher also found that there were varying levels of understanding between more established and recently formed innovation teams. These outcomes could be vital in the response by innovators and the risk function to the fourth industrial revolution. Understanding what balance, if any, is struck between changing quickly and changing safely could clarify the extent to which the risk management process supports and enhances the innovation lifecycle and how best the banking opportunities on offer can be optimised for the industry and for its customers. Study outcomes also pave the way for further studies of the risk management process during digital innovation projects.

Background

Impact of digital innovation on organisations

It is widely accepted that digital innovation in current market conditions creates economic value for those taking part (Philbeck & Davis, 2018). In banking, digital innovation impacts on both financial performance and customer experience (Mbama & Ezepue, 2018). Digital banking offers customers choice and convenience (Rahman & Abedin, 2021); it also enables the institutions to cut back on their geographic footprint, which significantly reduces operating costs (Mbama & Ezepue, 2018). Businesses across various industries have to adapt to customer expectations (Li et al., 2017; Schwab, 2016), and banks' operations are changing as technology significantly shifts its models from banking in branches to "banking from everywhere" (Rahman & Abedin, 2021). Changes in customer needs and expectations mean that customers may no longer be satisfied with services that impressed them in the past. Rizwan et al. (2014), for example, found that innovative developments in modern banking improve customer satisfaction and that growing numbers of customers are demanding new technology and improved services.

Competition from emerging entrants puts further pressure on banks to change their business models and product offerings (Das et al., 2018; Flejterski & Labun, 2016). Furthermore, the speed of technological developments reduces the time available for decision-makers to reflect, with companies not heeding the call to reach quick decisions doomed ultimately to fail (Rahimnia & Molavi, 2021). Several studies refer to the direct relationship between competition and the pressure both to innovate more and to assume potentially riskier projects than would have been the case without competition (Akande et al., 2018; Duong & Swierczek, 2019; Rahimnia & Molavi, 2021). Such conditions require executives to take decisions at speed – a topic that is not receiving enough attention from researchers. It has been reported, however, that executives who can fast-track their

thinking processes and the rate at which they make strategic decisions tend to outperform those who are not able to do so (Rahimnia & Molavi, 2021).

Executives continually explore ways in which they can increase their decision-making speed, which requires firms to abandon fixed and routine methods and processes as they pursue new ways of working to remain competitive (Rahimnia & Molavi, 2021). Banks strive to be first-to-market entrants to gain competitive advantage. Research conducted by Robinson and Min (2002) indicated that the first entrant, or pioneer, gains a monopoly in the market. This is in stark contrast with what has been found to be the case for late entrants, who are more vulnerable to failure owing to their low market share.

Tupa et al. (2017) refer to the need for risk management processes to adapt to the changing conditions and to new risks associated with the digital innovations of the fourth industrial revolution. As Sareen (2013) explains, risk management policies are intended to introduce principles that allow organisations to make good decisions and thus, improve performance – deviation from policies can expose the bank to increased risks beyond its risk appetite. Risk appetite can be an extension of the risk culture of an organisation (Power, 2009), so it is important to understand what the risk culture is during digital innovation, a process through which an organisation has much to gain, and potentially much to lose.

Challenges introduced by digital innovation

Tupa et al. (2017) highlight the importance of considering the risks of not pursuing an opportunity and Qazi et al. (2021) discuss the threat of missing out on an opportunity altogether. Such considerations could prey on the minds of decision-makers, potentially clouding their perception of risk management through the belief that taking time to consider risk may derail delivery of their projects. Rahimnia and Molavi (2021) also argue for considering the risk of missed opportunity in the context of innovation. They explain that the speed at which strategic decisions are made can increase the success of innovation, and that delaying such decisions can lead to the benefits of new ideas not being realised. Here again, decision-makers may be worried about deferring delivery because risk considerations could delay decision-making. Palermo et al. (2017) highlight the point that the “logic of opportunity” is brought about by innovation and risk-taking, while the “logic of precaution” emphasises controls and risk avoidance. The contrast between these logics, both of which are inherent to risk management, illustrates the tension between the need to change quickly and the need to change safely.

It is critical to appreciate the environment in which financial institutions currently operate in order to understand their risk culture. Organisations seek to develop ways in which they can create competitive advantage to keep opposition at bay (Rahimnia & Molavi, 2021). According to Akande

et al. (2018), competition is an important consideration in any banking environment; others have argued that banks are more likely to exhibit risk-taking behaviour in competitive environments because of the potentially destabilising effects of competition (Arping, 2014).

Considering the competitive market, need for innovation, and time-pressure under which banks find themselves operating, behavioural aspects of senior management need to be considered (Rahimnia & Molavi, 2021; Robinson & Min, 2002), given that the perceived benefits of being first to market have a potential influence on their decisions and actions. Decision-makers' risk attitudes refer to the preference they show towards situations that include uncertainty (Qazi et al., 2021). Attitude is especially significant in the context of digital innovation projects, as novel technological projects could potentially increase project uncertainty. Qazi et al. (2021) drew associations between an individual's personality type and risk attitude, noting that the risk attitude of individuals impacted their risk assessments. These studies refer mostly to decision-makers as executives (Duong & Swierczek, 2019; Rahimnia & Molavi, 2021; Sareen, 2013), who ultimately form the top management of organisations and whose tone, therefore, needs to be carefully considered when investigating risk culture. To the best of the researcher's knowledge, the behavioural aspects which would influence risk culture during digital innovation projects have not been examined in earlier studies.

The literature identifies several risks associated with digital innovation in banking, of which the first relates to governance. Governance is important in the field of technology, as it ensures the alignment of business and IT risk strategy (Racz et al., 2010). Sareen (2013) raises the crucial point that governance introduces accountability, ensuring that good decisions are made as they relate to digital innovation. Implementing and following risk management policies allows for assurance through monitoring, therefore embracing best practice (Sareen, 2013). Another key emerging risk brought about by digital innovation is in the area of cybersecurity. Cyber-attacks can cripple banks for sustained periods, resulting in lost revenue as well as reputational impact when these attacks reach media headlines. Such attacks continue to increase, with certain financial institutions classifying cybersecurity as a key concern (Brockett et al., 2012; Camillo, 2017).

Consideration of risk during digital innovation

In the banking organisation studied here, a group internal audit (GIA) report, which examined the first and second innovation projects delivered by the bank, found high levels of deviation from and non-compliance with risk management policies. The report tested compliance with policy requirements, without considering the behavioural aspects during decision-making. This report indicated, however, that the risk appetite statement of the examined business unit was vague with regard to innovation projects. The root cause of deviations described in the report were behaviour related, GIA however only performed a compliance check, which did not identify the behavioural causes. The present research explores reasons behind such behaviour, and how it may have been

influenced by the prevailing risk culture in digital innovation projects. Several authors have attempted to explain the meaning of risk culture (Ring et al., 2016; Roeschmann, 2014; Sheedy, 2016; Sheedy et al., 2017), with definitions that focus on business stakeholders' perceptions of risk management. The FSB (2014) has a broader definition, which also includes organisational awareness, attitudes and behaviours related to risk-taking.

Alosaimi and Alnuem (2016) and Tupa et al. (2017) stress the importance of risk management during digital innovation, as new risks inevitably arise as the market changes. Risk management employs systematic means to identify, assess and manage threats to the organisation effectively (Sareen, 2013). Ferri et al. (2021) propose that the strategic and operational impact of considering risk during decision-making processes be determined, as pointed out earlier by Caldarelli et al. (2017). Both the Ferri and Caldarelli studies discuss the value of risk perception among decision makers in their adoption of new technology but stop short of addressing risk management practices associated with such initiatives. Despite the growing prevalence of digital innovation, the various aspects of risk related to it (including risk perception, risk culture and specific risk categories) remain overlooked. Furthermore, if the risk management function is viewed as a hindrance (Peretti-Watel, 2003), this could undermine understanding of its critical role and contribution in the digital innovation lifecycle.

The FSB (2014) states that a suitable risk culture is required to appropriately manage risk-taking in excess of an organisation's risk appetite. The GIA report of the subject bank covered two digital innovation projects, under the management of the business unit accountable for the initial phases of digital innovation projects, including conceptualisation, design, and execution. The first project, an e-commerce platform, aimed to attract millennials and establish a banking relationship with them. The second was a platform enabling small businesses to connect, network, and interact with each other. The report noted several findings that cast doubt on whether risk was being adequately considered during digital innovation, listed as follows:

1. Inadequate management of third-party vendors, including Fintech [i.e. financial technology, a portmanteau term for technology and innovation that enables financial services] companies.
2. Misaligned security standards between the vendor and the bank's Cloud environment.
3. Insufficient tracking and remediation of vulnerability assessments.
4. A high level of deviation from the bank's group level policies and risk management practices.
5. Roles and responsibilities not clearly defined for technical resources.
6. Technical resource and skills shortages.

Previous academic articles have indicated emerging risks introduced through new technology, such as cloud computing in the report's second finding, and how risk management should be applied to ensure that implementation of new technology aligns with business strategy. Research has also

indicated that risk management practices and policies need to keep pace with the changing market landscape, as reflected in the first four findings of the GIA report. Therefore, the issues identified by GIA are supported in the literature reviewed.

Risk culture indicators as analysis tool

In their systemic approach to risk culture, Zaïman et al. (2021) used the Financial Stability Board’s indicators (FSB, 2014) in combination with the work on risk and culture by the Central Bank of the Netherlands (DNB, 2015) to create the systemically integrated model of risk culture shown in Figure 1. The model consists of structural and behavioural indicators, which I used as the basis for coding the data from my study. The model provides an exploratory systemic view of the main organisational factors that may influence risk consideration during digital innovation and applies a decision-focused approach to defining risk culture. This approach views risk culture as the consideration given by groups to risk during the decision-making process. This process is discussed in the next section.

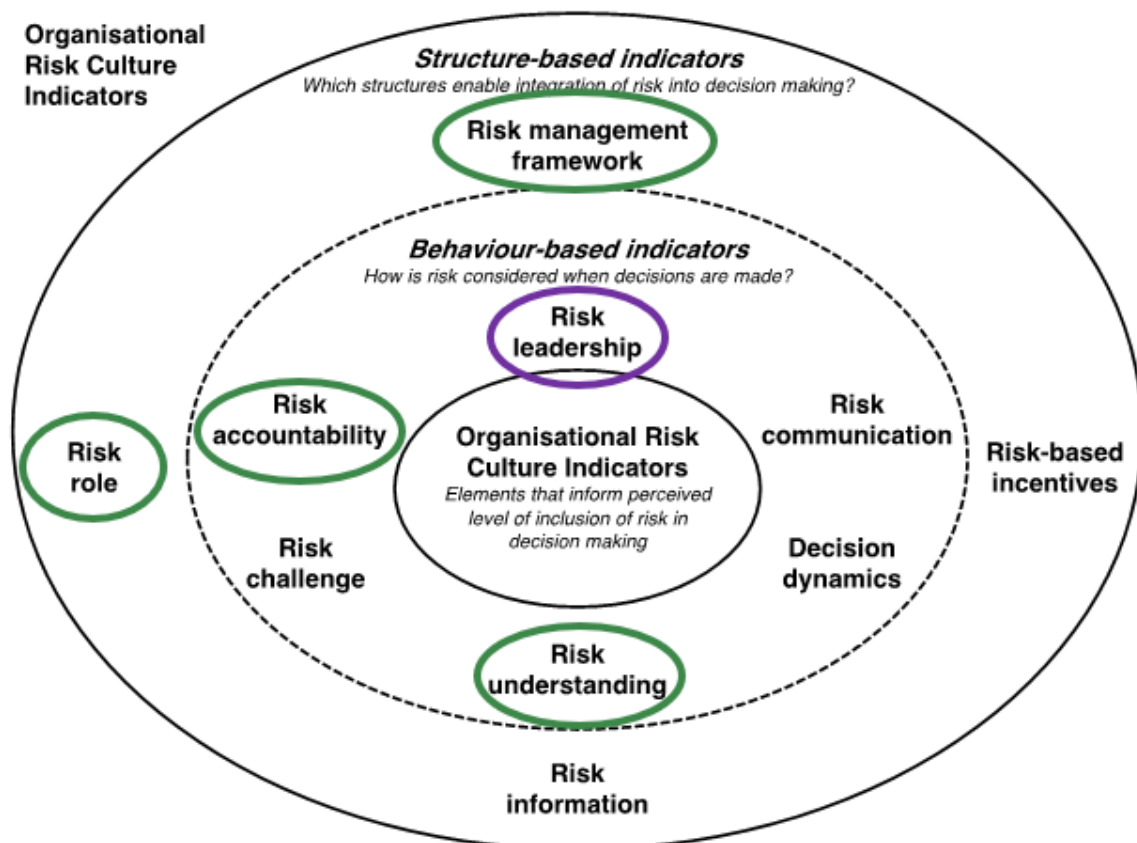


Figure 1: The Risk Indicator (RiDC) model, indicating study specific indicators.

Figure 1 illustrates the RiDC model, which was used to thematically code research results. The indicators (listed in italics) initially thought to be prevalent to the study, based on literature review, are circled in green and comprise *Risk Management Framework*, *Risk Role*, *Risk Understanding*, and *Risk Accountability*. Based on the results of this study, *Risk Leadership*, encircled in purple, was found to be a potential underlying cause of issues identified related to prevalent indicators.

Method

Research Design:

A qualitative study was conducted in the retail segment of one of South Africa's largest commercial banks and was specifically limited to the business unit accountable for the initial phases of digital innovation projects. An interview-based approach was followed to provide indicative feedback about perceptions of risk management during digital innovation projects. As no published literature on risk culture in the context of digital innovation projects was found, I opted for an exploratory design, electing to conduct semi-structured interviews. Vasileiou et al. (2018) argue that qualitative studies yield "richly-textured" information, necessitating the careful selection of participants, so the purposive sampling method was employed. The benefit of this data collecting method is the opportunity it offers to gain detailed understanding of why and how certain things happen, through the personal experiences, opinions and feelings of the individuals intricately involved in the process (Jain, 2021), thereby yielding the intended "richly-textured" information. Once disseminated, this information could pave the way for future more in-depth investigation into risk associated with digital innovation.

Data Collection

Participants

The participants were all senior members of staff in the Chief Digital Officer's portfolio, including senior managers and executives, as these staff members were involved in strategic and operational decision-making. The selected individuals were intricately involved in digital innovation projects and able to provide detailed views of consideration of risk when decisions were made during the innovation lifecycle.

Many of the participants fulfilled the role of channel or product owner on existing digital channels. They were largely charged with the end-to-end delivery and maintenance of products, services, and new features on these channels. Other participants were charged with solutions which are practical tools and services provided to customers in addition to the traditional banking products. The remaining participants had senior support roles, such as operations, commercialisation, design, customer complaint handling, and finance. The digital channels, including products on these channels, were more established than their 'beyond banking' counterparts.

Sampling

The sample population consisted of 56 senior staff members, spanning existing digital products and channels, beyond banking, and support functions (Appendix E). Initially, the researcher expected that interviewing 25% (14) of the total population would yield adequate thematic saturation to provide a representative indication of decision maker views on the topic under consideration. Where initially

selected participants were not willing or able to be interviewed, the researcher selected participants from remaining senior staff members.

The initial invitation was sent, via the Bank's internal email service, to 24 senior staff members in the Chief Digital Office. Two members were unable to participate owing to capacity constraints; and three invitees did not respond. A total of 19 (34% of total population) staff members involved in decision-making during digital innovation projects participated in the study.

Instrument

A semi-structured interview guide (Appendix B) was crafted, with three demographic and four open-ended questions, aimed at providing insights into risk culture during the decision-making processes in digital innovation projects. The questions below were expected to provide insights into impediments in the digital innovation lifecycle, and potentially providing insights into participants' attitudes to the risk management process.

- What do you consider to be the biggest risk management impediments to digital innovation in this bank? And could you explain why?
- How and where is risk formally considered during digital innovation?
- How is risk included when decisions are made that may negatively impact the outcomes of digital innovation projects?
- How can the active inclusion of risk in digital innovation projects be improved?

Procedure

Before the interviews were scheduled, the questions were piloted with the Head of Risk for the group's technology cluster. The purpose of this pilot was to make sure that questions posed to the participants would be clearly understood. The pilot resulted in the first question being adapted to specify risk process impediments, as the initial question seemed too vague. The Head of Risk also suggested asking participants how and where risk was formally considered, as distinct from only asking "how", in the hope that participants would focus their feedback on the risk management process itself. This question, however, still turned out to be the most confusing one with a few participants asking for further clarity. Many participants also struggled with the difference between the second and third questions, so the third question was treated as a follow-on to question 2. Participants mostly elaborated on the value they believed the Risk Chapter could add when included in discussions early in the innovation process. Chapter is the collective term used for support areas outside of the digital division. Chapters are expected to provide resources and subject matter expertise to the delivery squads. A non-exhaustive list of Chapters includes risk management, system architecture, information security and vendor management.

Because of restrictions imposed during the COVID-19 pandemic, interviews could not be conducted in person, so all of them were conducted digitally on the Microsoft Teams platform. Each interview was scheduled to last 60 minutes, to allow enough time for follow-up questions. They commenced with the demographic questions, followed by the open-ended questions. The researcher posed probing questions when necessary to gain further clarity. Interviews were recorded for transcription purposes. Participants were informed that recordings would be destroyed after the conclusion of the study. Transcripts are safely stored by the researcher for a three-year period for auditing purposes.

Ethical Considerations

An informed consent form (Appendix A) was sent to participants ahead of each scheduled interview, clarifying the purpose and aim of the study, potential risks and benefits of participation, and the process which would ensue. This afforded participants time to prepare and consider whether they wanted to participate in the study. Participation was voluntary, and the researcher obtained informed consent electronically from each participant before conducting the interviews. Consent included confirmation that participants understood the risks and still chose to participate. Each participant was also informed that they were allowed to exit the interview at any time should they wish to do so.

The researcher anonymised the data to ensure that neither the company, nor the interviewee could be identified in the study transcripts. Instead, participants were allocated an alphanumeric character, "A" through "S" in the thematic codebook, with their responses coded against each character. Confidentiality, involving removal of personal and identifiable information from the data they provided (Coffelt, 2017), was applied to safeguard them.

It was also important to keep in mind potential biases and limitations of interviews throughout the research process. This was managed through constant consultation of the interview guide during interviews, and transcripts during data analysis. Random samples of the anonymised transcriptions were reviewed by the researcher's supervisor, to assist in producing unbiased results.

Data Analysis

The researcher used the risk indicator model (RiDC) by Zaaiman et al. (2021) as a way of structuring the primary data. Themes were extracted from the RiDC codebook, and sub-themes were developed based on data collected from participants, as summarised in Table 1. A view of the references sought is indicated under each sub-theme, together with the number of participants who provided feedback under each sub-theme. Participant feedback was supplemented by sources from the literature, which were triangulated with the thematic codebook. The triangulation highlighted key findings, indicating where participants agreed with the existing body of knowledge, as well as areas of contradiction (Appendix C). It also illustrated new knowledge gathered by this study. The

researcher aimed to reach data saturation, that is, the point at which a researcher can no longer add additional data to the thematic codebook (Ando et al., 2014).

Table 1: Overview of themes derived from the Risk Culture Model and interview feedback

Theme	Sub-theme	Literature Review	Interview Feedback*		
			DPC (8)	BB (7)	SF (4)
<p><i>Landscape Change</i> The need to transform the bank's operations to embrace opportunities afforded by the ever-changing environment and evolving markets.</p>	New Entrants	(Das et al., 2018)	3	5	1
	New Technology	(Qazi et al., 2021); (Li et al., 2017) (Rahimnia & Molavi, 2021)	1	3	1
	Competition	(Rahimnia & Molavi, 2021)	3	3	2
	Customer Needs	(Li et al., 2017); (Schwab, 2016), (Rahman & Abedin, 2021); (Rizwan et al., 2014)	2	1	1
<p><i>Risk Management Framework (RMF)</i> The RMF consists of the bank's risk management policy and strategy, risk methodology and processes, risk appetite framework (inclusive of tolerance limits), and resourcing and governance arrangements to enable embedding. The bank's operating model and risk attitude inform the risk management strategy.</p>	Governance/ Policies and Frameworks	(Sareen, 2013); (Rahimnia & Molavi, 2021); (Racz et al., 2010) (Alosaimi & Alnuem, 2016); (Tupa et al., 2017)	5	6	1
	Interpretation of Legislation	(Das et al., 2018).	6	6	1
	Organisational Structure	(Duong & Swierczek, 2019) (Fraser & Simkins, 2007)	8	6	2
<p><i>Risk Role</i> All the board and staff member must have a clear and shared view and understanding of their individual roles in the risk management, as assigned by the bank's RMF.</p>	(Timing of) Formal Inclusion	Bowers and Khorakian (2014) (Fraser & Simkins, 2007) (Rahimnia & Molavi, 2021)	8	6	2
	Risk Management Partnership	(Duong & Swierczek, 2019) (Ferri et al., 2021)	8	6	2
<p><i>Risk Accountability</i> Perceived and actual accountability for effectively taking risk into account when making decisions.</p>	Risk Management Mandate	X	X	X	1
	Time Pressure (Leadership Tone)	(Qazi et al., 2021) (Rahimnia & Molavi, 2021)	1	4	1
<p><i>Risk Understanding</i> Appropriate and effective inclusion of risk when decisions are made by the innovation project teams. This includes the timely identification and escalation of emerging risks which could adversely impact on the bank's innovation strategy.</p>	Cybersecurity Risk	(Brockett et al., 2012) (Camillo, 2017), (Sareen, 2013)	2	1	X
	Conduct Risk	(Sareen, 2013)	4	2	1

*	
DPC	Digital Products and Channels (8 participants).
BB	Beyond Banking (7 participants).
SF	Support Functions (4 participants).

Results and Discussion

Participant A best summarised innovation in banking when he stated that: “True innovation for me, is proper disruption or something that differentiates you from your competitors. Something that gives you a step ahead”. As innovation is necessary to ensure the survival of any business in a competitive environment, this holds true for banks as well (Rahimnia & Molavi, 2021; Robinson & Min, 2002). Banks expand and improve their digital products and services through innovation, in so doing attracting more clients and, in some instances, reducing their operating costs (Mbama & Ezepue, 2018).

Initial coding indicated that participants’ feedback focused on the *Risk Management Framework (RMF)*, *Risk Role*, *Risk Accountability*, and *Risk Understanding* as described in the RiDC model (Zaaiman et al., 2021). Upon interpretation of the feedback, there were indications that leadership’s risk tone may be at the root of many issues identified by participants.

Table 2 summarises indicative findings, following the interviews conducted, to identify how risk was considered during digital innovation. Participants were segmented into their specific area of innovation, that is, the digitisation of banking products and channels, beyond banking initiatives and support functions. Digitisation of banking products and channels (DPC) is charged with delivery of new products and features, and maintenance of digital channels. ‘Beyond Banking’ (BB) refers to the individuals charged with service offerings outside of traditional banking. Support functions (SF) represent Finance, Operations and Support, Design, and Customer Engagement. A new methodology for delivering digital features, which is the generally accepted practice within the digital division calls for the creation of what is termed a Full-stack Squad prior to commencement of planning the delivery of a new feature (Appendix D). The squad consists of management, technical staff, project managers, designers, and product owners. The squads are supplemented by Chapters, who are expected to provide resources and support to these squads. One of these Chapters is the Risk Chapter, represented by the risk lead who ensures that the correct risk subject matter expert (SME) support is requested where necessary.

Table 2: Summary of the collective feedback provided by participant categories across themes.

Theme	Digital Products and Channels	Beyond Banking	Support Functions
Changing Landscape	The Bank is in constant danger of losing competitive advantage, due to its slow response to customer needs.	Concerned about new entrants to the market, and their opportunity to disrupt, as they are less regulated.	Specifically noted the threat posed by other established banks who seem to be more agile than the subject bank.
Risk Management Framework	Risk practices create multiple governance layers, which increase the boundary to entry into market, and time to market.	Risk practices were suited to established banking products, and the rigour required for such products – but the practices were not agile enough to cater to the dynamic environment in which the division operates.	Participants were most concerned with legislation and the risk averse interpretation applied within the subject bank. They also acknowledged the rigidity of the RMF.
Risk Role	Participants believed that the risk function should identify and mitigate risks. The organisation’s operating model should facilitate the effective inclusion of risk management, and better educate innovators on the Risk Role.	By design, the risk function should be included every step of the way; this requires sufficient resourcing to ensure the right participation.	Misunderstanding regarding risk function’s role. Participants felt that the risk function should be part of the outcome of the innovation lifecycle. They pointed out that the risk function understands only the potential risks and not the rewards.
Risk Accountability	Certain components of the digital innovation project may need to be refactored if risk management is not considered up front – this could mean delays, and competitors beating you to market.	Severe time pressure results in corners being cut – one of these is often ignoring the risk management process.	The subject bank is extremely risk averse and tends to avoid risk as distinct from mitigating risk. This results in the subject bank in some instances reducing its own potential market.
Risk Understanding	Being more invested in banking products, and therefore transactional capability, these participants acknowledged that cyber risks were the greatest emerging threat, as it could impact the trust clients have in the bank.	These participants noted the updated regulation regarding customer privacy and the fact that our conduct needed to reflect a customer-first mindset when developing new initiatives.	These participants were concerned that, the bank was not able to serve potential customers as the bank was too risk averse in interpreting regulations.

Changing Landscape

The fourth industrial revolution and associated technology have created a shift in the market (Schwab, 2016). Participants in this study recognised the changing landscape, the concerns it brings, and the need to respond swiftly. Most notably, concerns about the changing landscape pertained to regulation and its interpretation by the subject bank. The participants believed that regulation itself, in general, was a barrier to innovation. This view converged with their concern that new entrants, such as retailers and Fintechs, were able to enter the same market with ease, as the same regulatory rule-sets do not apply to them. Most of the participants showed concern about the change in market landscape, and the uncertainty it has brought. Participant J summarised best, saying: “An absence or a limited understanding as to what the future financial services [landscape] is going to look like in the context of digital[isation]”.

The greatest concern for BB participants was the threat posed by new entrants. Just over 70% of this group cautioned that new entrants were disintermediating banks from their customers because new entrants were not as heavily regulated as the banks. The DPC participants were concerned that the incumbent financial services competitors were less risk averse in their interpretation of regulations and were therefore much quicker to respond to changing customer needs. This concern was shared by SF participants, one of whom, Participant P, had personally noted this to be the case, having previously worked for a competitor bank before joining the present digital team. There was a collective understanding among participants that the change in market context required an agile response to changing customer demands.

Risk Management Framework

According to Fraser and Simkins (2007), a lack of understanding of enterprise risk management results in the function being seen as a burden, requiring needless “paperwork” and causing frustration, which casts doubt on the value it delivers. They believe that a “process-driven” mindset needlessly spends effort and energy on long exercises, which supports the call by participants in this study for a “risk-adjusted mindset”. Participants widely referred to tick box exercises when discussing the contribution of the function in the past. In DPC, where the Risk Chapter was more embedded into their design and maintenance processes, participants noted that it was part of the team and took care of their interests. Participants involved in DPC agreed that risk processes were cumbersome and, as Participant A remarked, required “jumping through multiple hoops”. This group of participants felt frustrated by the internal control processes. Some two-thirds of these participants felt that the risk management framework was an inhibitor to innovation.

Many participants discussed the need to move to market first. Participant D called the gap in the market “white space”, which closed extremely quickly. Anderson (2011) had observed that the need to act quickly is pitted against the need to weigh and consider the risks associated with potential

innovation. The study participant asked how the risk function would adjust current processes to adapt to this new landscape, an issue also raised by Alosaimi and Alnuem (2016). Participants generally felt that current policies and frameworks had created governance structures which require multiple layers of approvals. Participant O stated outright that the ability to make decisions quickly was impacted by the subject bank's governance structures. The bank was devising beyond-banking strategies, while the current policies and frameworks were still addressing products and offerings of a traditional bank. All the BB participants without exception agreed that risk policies had been developed to support banking infrastructure, and that refinement was needed for a balanced risk-based approach to support the dynamic environment in which they operate. One participant stated that while policies had been designed with rigour for the banking environment, digital innovation is meant to disrupt the banking environment. Another participant explained the challenge as follows: "It's difficult to actually bring in something new when the rules basically only allow it to be done in the way it's always been done".

Half of the SF staff acknowledged the inflexibility of current risk management practices, but they were mainly concerned that risks were expressed in the context of the legislative framework, and with the risk-averse way the letter of the law was interpreted in the subject bank. This approach reduced the base of potential customers and increased the time required to find solutions to legislative requirements. Participants across all the areas of innovation agreed that the RMF – the policies as well as the mindset used in applying risk practices – was an obstacle to innovation in the context of the changed market landscape. This view confirmed the GIA findings that the RMF was not fit for purpose in the agile lifecycle of digital innovation.

Risk Role

There was general confusion about the role of the Risk Chapter within the squads, and that of the innovation teams regarding risk management during digital projects. Half of the DPC participants believed that the risk lead should be included in their delivery teams to influence the outcome of the project and de-risk their projects to mitigate any potential reputational risk. In BB, emphasis was placed on the need for various subject matter experts (within the Risk Chapter) to guide them throughout the innovation process, as risk management was such a broad discipline with many specialities. One participant noted the lack of resources that could function as an SME on all risk types. Another participant stated that innovators did not know everything, but benefitted from having risk SMEs present during decision-making. Participants in SF also thought that the risk lead should be co-accountable for the outcome of digital projects, conflicting with another's view that innovators own the risk and that, therefore, the risk lead should provide innovators with the tools to understand risk considerations. According to participants, the Risk Chapter only factored the risk into the decision-making and not the reward.

There seemed to be consensus in the group that the risk lead should be engaged as early as possible, in stark contrast with the feedback received by Bowers and Khorakian (2014) that risk management would be more appropriate during later phases so as to allow innovators to be more creative. Their study concluded that consideration of risk stifles ideas and innovation and would therefore be better suited later in the process. Participants largely disagreed with this view, believing that later consideration would require too many changes, and would therefore increase time to launch.

Participants in BB observed the value of including the risk lead in their delivery teams. These teams commence execution planning in what they called “Sprint Zero”, which was where participants believed that the risk function should be included. In the more established DPC area, participants believed that the risk function should be included earlier still, at the very inception phase, during strategic planning. These participants understood that the risk function should be included when ideating their competitive responses. Participant E demonstrated this point best:

I think the risk team plays an absolute balancing act right, because on the other side of the scale, you know the risk guys have always been seen in a negative light, as blockers to growth, and I think the risk team can be your friend when you have sort of scenarios that can blow up to an extent that destroy all your brand value and trust.

The SF participants emphasised the lack of clarity about the risk function’s mandate in the decision-making process. Despite the confusion, however, a couple of participants demonstrated a particularly good grasp of what the Risk Chapter’s role should be in the digital innovation lifecycle, as Participant D in DPC said: “Operating model must facilitate partnership and collaboration between all the parts of the value chain”.

Successful execution of risk management relies on multiple skills sets and extensive input from the respective disciplines (Fraser & Simkins, 2007). This principle contrasts with the way risk management was seen, in the present study, as “[a] referee to stop us from getting red cards” [Participant G] or “policemen” [Participant E]. Participant O, who suggested that the accountable executives should first and foremost understand the value of the risk management function, then added that the function, being such a wide field of expertise, often required the input of multiple risk type subject matter experts (SMEs), because few individuals were able to provide a view or opinion across all risk types. This need for multiple SMEs confirms the view shared by Duong and Swierczek (2019), who believe that effective execution of innovation requires collaboration across different competencies. The uncertainty surrounding the *Risk Role* supports the DPC participants’ view of the need to “actually educate the broader bank on the [Risk] roles” as envisaged in the Bank’s risk policies.

Risk Accountability

Participant G remarked that the innovation world is built on breaking the rules, and, according to the participants, there exists what they called “natural friction” in banks between innovation, on the one hand, and governance rules and mindsets on the other. As risk management is meant to aid decision-making and assist management during problem solving, the best time to consider risk in the innovation process would be when initial decisions are made (Fraser & Simkins, 2016). In an earlier paper, Fraser and Simkins (2007) suggest that the time for considering opportunity risk versus the downside of pursuing a digital innovation project should be during initial strategic planning. As many as five participants in the present called for risk management to be involved during the annual strategic planning, and to get involved in the ideation phases of innovation projects. Some participants in BB, however, openly admitted to considering risk too late in the process, citing the speed at which they were required to work to go to market. Participant H explained that delaying the consideration of risk could derail the project altogether: “We’d come up with ideas, and then only push it through a risk committee and funnel [...] after the effect, and then you actually [have to] close off the idea”.

The subject bank faced missed opportunity where innovators did not own their accountability for ensuring that risk identification was included as early as possible in the innovation lifecycle. The DPC participants stressed that failing to include risk in decisions early enough could result in waste of time and energy retrofitting initiatives to cater for requirements not previously considered, thereby advantaging the opposition: “If you don't have that risk mindset as part of the design process, you will be delayed and there will be somebody who will go to market quicker than you”.

There seemed to be disparity between the care taken to involve risk management in decision-making between BB and DPC presumably to the varied past involvement of the risk function. As a more established area, DPC had had more exposure to the Risk Chapter and a more balanced view than BB, the necessity for the risk management view is one echoed in literature.

Risk Understanding

Emerging risks are a reality emanating from the changing landscape, which is to be expected according to Tupa et al. (2017). The expanding landscape has increased the number of emerging risks, requiring the intervention of specialists in the risk function. The study results indicated positive trends in terms of *Risk Understanding* as it pertains to the appropriate and effective inclusion of risk when decisions are made during the digital innovation lifecycle. Participants understood that their risk profile had changed along with changing market conditions, with Conduct risk and Cybersecurity risk being the most prevalent in the feedback received. This aligns with prevailing literature, which stresses the impact of the emergence of cyber threats in financial institutions (Camillo, 2017). Participants representing DPC stated that cybercrime posed the greatest threat to their business

model: “Cybercrime is probably the biggest risk to us as a business [...] that in turn means the biggest risk to us, is that we lose trust”.

The BB participants, who develop new functionality, which requires a great deal of customer data, were more concerned about Conduct risk and requirements imposed by regulation. The SF participants agreed that regulation impacted the ability to serve customers, they were concerned that these regulations were impeding the bank from serving potential customers in need. In the words of Participant J: “We can't do good if we actually lack the capability to serve the customer because we've excluded them from our banking scope”.

Participants clearly understood that the changing landscape brought new risks and showed an inclination to identifying the risk types most applicable to them. The researcher however detected non-adherence to the formal risk management process by participants. It seems there is a domino effect starting with participants' lack of understanding of risk management. Participants had a negative perception of risk management, as they considered the RMF to be process-driven and cumbersome, which frustrated them. These decision-makers were therefore averse to their role in the risk management process, and as a result, to their accountability for owning this process. The researcher identified a general disregard of risk in decision-making, which could result in failure to report strategic and potentially systemic risks to appropriate governance forums.

Conclusion

This study sought to investigate risk management and the culture of risk-taking during banks' implementation of digital technology to keep pace with the rapid evolution of the market in which they operate. Using thematic coding and the RiDC model, relevant themes were identified. The researcher was able to determine the extent to which risk was considered during digital innovation projects in the studied bank. A culture of unchecked risk-taking was identified, as participants were innovating at velocity to capitalise on the opportunity of reaching the market first.

The participants recognised the changing landscape, the risks it brought, and the need to adapt. Their collective view was that less regulated entrants were able to play in this emerging market much more efficiently than the banks. Some participants thought that other financial institutions had prepared quick and suitable risk-adjusted responses, which the subject bank had failed to do.

The changing landscape, brought on by changing market demands, has created complexities that need to be navigated by innovators in financial institutions. The participants' consensus opinion was that the risk management framework needed to be reconsidered in the context of the Bank's rapidly changing operating environment. The risk management framework was not fit for purpose in the new

market context, as it only addressed products and offerings of a traditional bank. Innovators were finding it challenging and time-consuming to create new products and services when the rules only allowed things to be done in the old ways. The bank commenced an exercise to ensure that risk management policies suitably addressed market conditions. The first action was compiling a policy that applied to disruptive innovation projects. Participant feedback indicated that further work on the risk management framework is required.

The role of the Risk Chapter was clearly misunderstood. However, participants felt strongly that partnership with the risk function throughout the ideation and design phases of the project was of paramount importance. Participants indicated that engaging the risk management function early in the process, could limit delays later in the process, potentially decreasing time to market. They indicated that management should provide the Chapter an opportunity to provide ongoing support and, by implication, sufficient resources to create capacity to allow the collaborative partnerships that the participants called for. Resolving innovators' lack of understanding of risk management requires large-scale awareness, to educate the division charged with innovation about not only the risk function's role, but their own risk role in the risk management process, and the value thereof.

Confusion concerning the risk role of innovators contributed to a lack in their taking accountability for their role in the risk management process. Feedback during the interviews indicated that the negative perception of the risk function is due to innovators' frustration with the risk management framework, which in turn created an adverse attitude towards risk management. This tone resulted in risk management practices taking a back seat, overtaken by the urgent pursuit of landing innovative features as soon as possible in the market.

There was a collective feeling among participants that the risks inherent to innovation needed to be embraced by the leadership, who then needed to create a safe environment in which innovators would be able to ensure that both risks and rewards were considered, not only the rewards. Due to a push for results, participants favoured changing quickly over changing safely, with risk consideration taking a back seat to delivery speed.

The limitations of this study included the narrow view of what occurs around the risks associated with digital innovation in banks, whereas the financial services sector is much broader. However, this research opens the door for investigation into risk management consideration at the new entrants identified. A more comprehensive view could be provided by examining digital innovation in other commercial banks, and expanded further to Investment and Insurance players.

This study not only indicates the need for awareness among decision makers in innovation regarding risk management in large organisations, but it also calls for decision-makers in the innovation

lifecycle to embrace risk management throughout the innovation lifecycle, starting at inception of ideas. This in turn requires the risk management function to reconsider their frameworks, practices, and tools to cater to the changing needs of business. Accordingly, this study calls for a mindset shift among all the parties involved to facilitate the survival of large banks in the everchanging financial services landscape of South Africa.

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REFLECTION

The aim of this study was to provide a view of how risk is considered during the digital innovation lifecycle of a commercial bank. The topic was relevant in the light of the way the bank and other organisations are changing their business models to incorporate technology in an effort to remain competitive and relevant as customers' needs change. The intention of the semi-structured interviews conducted in this research was to provide "richly textured" information in a field that is currently under-researched: I discovered a lack of previous studies on risk culture in the field of digital innovation. The thematic codebook, which contained feedback from sources found in the literature, was triangulated to the feedback provided by participants (Table 3).

Feedback from participants yielded the following interesting results:

1. First and foremost, the risk function must reconsider their policies, frameworks and tools, and demonstrate that these are keeping pace with the technological changes in the organisation. The velocity at which innovators are required to pursue targets, in this changing landscape, calls for a risk-based approach.
2. Innovators' lack of understanding of risk management and of their role in the process has resulted in a lack of accountability. This calls for increased awareness about the risk management process from innovators.
3. Leadership buy-in is of utmost importance, as this would be required to drive the right behaviour. Leadership is also required to allow innovators the opportunity to fail fast and fail forward.

This study was challenging, as I had some preconceived notions on why there existed a lack of understanding of the risk management process. I had to guard against these biases, through continual reflection and consultation of the transcripts.

This study mentions the changing landscape in which the bank operates; to create a holistic view of the risk culture during digital innovation, further research needs to be undertaken. The present review considers only one bank in South Africa; future research could usefully consider new entrants, such as Fintech companies and retailers.

APPENDICES

Appendix A – Informed Consent

MCom Applied Risk Management UARM873 Mini-dissertation study Interview Informed Consent Form

Study title: Risk consideration during digital innovation at a commercial bank

Student (also called ‘the researcher’ in this form): Zanel Steyn

Study supervisor: Eddie Lindeque

Supervisor contact details: (c) 083 3753762, (email) eddie.lindeque@outlook.com

Document aim

The aim of this document is to provide potential interview study participants the opportunity to give formal informed consent to participate in this study.

Why this interview?

This is an academic study at master’s degree level, which provides the student the opportunity to learn how to do an interview-based study, while obtaining data expected to be useful for your organisation.

Informed consent process

The interviewer will obtain written consent from participants before setting up the interviews. Written consent is given by completing and signing this form.

Permission to do this study

Nedbank Group Ltd. has provided formal permission for this study to be conducted.

This study has been approved by the North-West University Faculty of Economic and Management Sciences Research Ethics Committee (EMS-REC.) *NWU-00861-21-A4*

Study aim

The aim of this study is to establish to what extent banks consider risk during their innovation journey. The researcher will attempt to obtain a view of whether changing quickly is considered to be more important than changing safely. Ultimately this should provide a view of whether an appropriate risk culture is adopted during innovation.

Why have you been invited to take part?

Participants who are key members of the Bank's innovation journey have been selected to participate in the study. This includes senior members of the Retail and Business Banking (RBB) Digital and Digital Fast Lane (DFL) businesses, to provide a view of decision-making processes and dynamics during digital innovation of the Bank's delivery channels.

The sampled individuals have been selected, having been involved in recent digital innovation initiatives. Sampled individuals have been selected as they have been critically involved in either strategic and/or operational decision-making. Junior members have not been selected, as they would be less involved in decision-making processes.

Interview process – what to expect from the interview

The scheduled interview will last 45 minutes. I may request more information from you post interview, if necessary, for clarifying study data. However, I shall endeavour to keep post-interview follow-up questions to a minimum.

The interviews will be run in a semi-structured manner, meaning that I shall ask a set of open-ended questions and may ask additional questions to clarify my understanding of your response.

To enable you to prepare for the discussion, I have added a list of questions I will be asking during the session, this should make for a valuable conversation, and reduce the time taken during and after the interview to clarify.

Before commencing with any questions, I would like to take a minute to explain the different concepts, Risk – According to (Zaaiman et al., 2021): Risk is the potential negative effect of uncertainty on achieving an organisation's objectives

Risk Management: According to (Hubbard, 2020) risk management is the identification, evaluation and prioritisation of risks. This is then achieved through coordination and application of resources to manage, monitor, and influence the impact of uncertain events to maximise the realisation of opportunities.

Firstly, I will just ask a couple of questions to get a better understanding of your role and your day-to-day decision-making activities.

1. What is your role title?
2. What is your role description?
3. How long have you been involved in the bank's digital innovation lifecycle?

Secondly, I would like to get your feedback on the innovation lifecycle in the bank, by getting your feedback on the following questions:

- What do you consider to be the biggest risk impediments to digital innovation in this bank? And could you explain why?
- How and where is risk formally considered during digital innovation?
- How is risk included when decisions are made that may negatively impact the outcomes of digital innovation projects?

- How can the active inclusion of risk in digital innovation projects be improved?

I need to audio-tape your interview to allow me to transcribe and analyse your responses post-interview. This will allow me to give full attention to your responses during the interview and not get side-tracked by multiple note-taking. I therefore kindly request that you consent to such audio-taping based on the requirement that the recordings be deleted after transcribing (see Study data management).

Study data management

The audio-recordings will be deleted after the information has been transcribed by the researcher or transcriber. If a separate (i.e., not the study researcher) transcriber is used, s/he will sign a confidentiality clause before transcribing (i.e., the transcriber may not talk to anybody about the study data). Neither the company, nor the interviewee will be identified in the study transcriptions. Your responses will be coded, and an alphanumeric code will be assigned (Participant A – I) ensuring confidentiality. The transcriptions constitute the raw data for this study, which will be stored safely by the researcher for three years. The interview content will be analysed and reported on anonymously. Responsible members of the North-West University may be given access to the anonymised data for supervision and/or audit of the research.

The researcher may wish to directly quote some of your responses in the study report, without identifying you. You will be asked to give permission for each such quote to be used.

Publication of the study results

The study will be written up as a confidential study report in the researcher's mini-dissertation. The report will be made available to the organisation in which the study was done. Post examination, the study may be published as an academic article if formal permission to do so has been received by the organisation.

Potential risks to you and the organisation in taking part in this study

Firstly, the interview will take up some of your valuable time, being a senior member of the organisation. This could extend to potential follow-on questions to seek clarity. The researcher will attempt to keep these succinct and to a minimum. The researcher has also provided the list of questions to participants prior to interviews, to allow for preparations. Interviews will be scheduled for 60 minutes, to allow for any follow-on questions and get clarity where required. The researcher will however aim to conduct the sessions within a 45minute timeframe. A potential risk inherent to such interviews, is that your identity might be divulged. This study however allows full confidentiality. To ensure confidentiality any information you provide will be removed from the insights gathered from your answers. You may also be weary of painting the organisation in a negative light. The researcher will make all efforts to keep both individual and organisation information confidential. The name of your organisation will not be requested, only the industry in which it operates could be divulged. Further to this all information shared will be removed from the data obtained during the interview. Lastly, as mentioned above, all recordings will be disposed of, and transcripts will only be shared with the lecturer reviewing the study. Should you have any other concerns about taking part in this study, please contact the researcher or study supervisor to discuss your concerns.

Potential benefits to you in taking part in this study

By participating in this study, you are contributing to a knowledge base that is currently limited. You can share your personal experiences in a completely anonymous way, allowing you the freedom to share whatever detail

you deem appropriate. You are contributing to society, and more specifically the risk community in sharing your unique experiences. Participating in a research study is a unique and potentially enjoyable experience. In sharing your experiences with the community, you allow future generations to benefit from your experience. Whether this be the benefit of learning from errors or duplicating the approach to achieve favourable results. Participating in the study allows you to reflect more deeply than you would have otherwise, on decisions made thus far.

Should you have concerns on this study

The interviewer has been trained to do the interview in an ethical and academically sound manner. Should you have any concerns about the interview that cannot be allayed by the researcher, either before or after the interview, you are welcome to contact the student’s supervisor (contact details above) to discuss these concerns. Should you wish to further escalate your concerns, please contact the module leader, prof Hermien Zaaiman at hermien.zaaiman@nwu.ac.za (082 921 0463).

Informed consent

	yes/no
I have read and understood this consent form.	
I have had a chance to ask the researcher questions on the study.	
These questions have been adequately answered for me to be able to provide informed consent to participate in this study.	
I understand that taking part in this study is voluntary.	
I have not been pressurised to take part in this study.	
I understand that I may exit the study at any time without being penalised or prejudiced against in any way.	
I hereby provide consent to contribute to this study under the conditions explained in this form.	

Initial each page and sign:

Signature:

Date:

Appendix B – Interview Guide

MCom Applied Risk Management UARM873 Mini-dissertation study Interview Guide

Study title: Risk consideration during digital innovation at a commercial bank

Student (also called ‘the researcher’ in this form): Zanel Steyn

Study supervisor: Eddie Lindeque

Supervisor contact details: (c) 083 3753762, (email) eddie.lindeque@outlook.com

Document aim

The aim of this document is to provide a guide to the student on how s/he will be conducting the interview after obtaining informed consent from the interviewee (see MARM Interview Informed Consent Form for this study for information provided to the interviewee before the interview).

Interview process

1. Clarification of understanding of informed consent form at start of the interview

process:

Thanks for agreeing to participate in this study. I appreciate your willingness to assist me with this research. Do you have any further questions or concerns on the informed consent form that you would like to discuss before we start the interview?

- If the interviewee has questions/concerns, discuss the questions before continuing with the interview. Remind the interviewee that s/he is allowed to leave the interview at any time during the interview.
- If the interviewee does not have questions or concerns, continue with the interview.

2. Interview:

- Pose the interview questions in the pre-defined sequence:

Where enough time is scheduled, and participant does not seem rushed, also where possible in BB innovation area and/or where participant seems to be uncertain – define risk and risk management, to give context to the study.

Then move to questions – first Demographic, then Interview feedback questions.

Demographic Questions:

1. What is your role title?
2. What is your role description?

3. How long have you been involved in the bank's digital innovation lifecycle?

Interview Feedback Questions:

- What do you consider to be the biggest risk impediments to digital innovation in this bank? And could you explain why?
- How and where is risk formally considered during digital innovation?
 - Follow on: How is risk included when decisions are made that may negatively impact the outcomes of digital innovation projects?
- How can the active inclusion of risk in digital innovation projects be improved?
- Facilitate the interviewee responses only when required by asking non-leading further questions:
 - Do not overdo probing questions to avoid influencing the interviewee responses.
 - Do not lead your respondent into providing information that you expect to be the answer to your research questions.
 - Pre-prepare non-leading probing questions for your interview. Example questions:
 - *When you say, what do you mean by that?*
 - *Tell me more about.... (referring to something the respondent said, not what you wanted him/her to say)*
 - *Please give me an example (concrete examples provide more information about the actual situation than general statements about a situation)*
 - *What does this look like in practice?*
 - *How does this happen? (note: ask 'how' rather than 'why' questions – see Harvard interview strategies document available on link listed at the end of the document)*
 - *How is this important to you?*
 - *How is this important to the organisation?*
 - *How is this important in the context of risk management (or insert a phrase related to your specific research objective) in the organisation?*
 - *If the person refers to how somebody else or a group feels about something, ask: How do you feel about this?*
 - *How does this information relate to the topic under discussion? (steer respondent back to topic when s/he digresses from the topic)*

3. Interpersonal aspects of interviews to keep in mind

Your behaviour during the interview will influence the interviewee's responses.

- **Do:**
 - Keep the possible biases and limitations of interviews in mind when designing, executing and writing up your interviews – interview transcriptions will assist you and others to evaluate how your own expectations and natural biases may have influenced the interview data.
 - Understand the aims of your interview questions in the context of your research project.
 - Ask simple questions that will provide information related to your research objectives.
 - Pilot and practice your interview before formal data gathering so that you can see what works and what doesn't work.
 - Ask only one question at a time.
 - Give the person time to think about the question – stay quiet during that time.

- Listen attentively to the interviewee.
- Ask clarifying questions where necessary for purposes of your research.
- Remain ethically sensitive as described in the Informed letter of consent – do not change the rules of engagement during the interview.
- Stay warm and empathetic (not sympathetic – see under ‘Don’t’ below) during the interview – you do not have to suddenly become a ‘cold fish’ during the interview.
- Relax and enjoy the interview.
- At the end of the interview, state why you are grateful to the participant for her/his time and inputs to allow the respondent to feel appreciated for their efforts to contribute to your research question.
- **Don’t:**
 - Interrupt your interviewee.
 - Convey any approval, sympathy, or disagreement, with your interviewee’s comments through words or actions (e.g. avoid encouraging nods, frowns, verbal affirmations or disagreements) – the interview is about what the person thinks, and not about how you feel about what they think.
 - Answer the question for the interviewee.
 - Don’t ask questions that can be answered with one word, such as ‘yes’ or ‘no’.
- **What if the interviewee becomes frustrated or emotional during the interview?**
 - Stay calm.
 - Do not interrupt, try to defend, comfort the interviewee, or ‘fix’ the situation – say as little as possible and allow the person to calm down.
 - Turn the audio-recording off if the person requests this.
 - When the person has calmed down, ask a question that acknowledges the emotion, such as *What about the situation prompted these strong emotions?*

4. Feedback to participants

In conclusion to the interview:

- Thank participants for their time and goodwill
- Ask them if they have any questions
- Ask participants if they would prefer to see the transcripts of the interviews prior to its use as part of the dissertation
- Ask participants if they want to receive feedback on the outcome of the research project
- Keep promises and provide participants with the requested information.

5. Further preparation for the interviews

Use other useful interview advice available online to prepare yourself for the interviews, e.g.:

<https://msu.edu/user/mkennedy/digitaladvisor/Research/interviewing.htm>

https://sociology.fas.harvard.edu/files/sociology/files/interview_strategies.pdf

Appendix C – Triangulation and Codebook

Table 3: The triangulation exercise—comparing the quotes from Participant feedback to the literature review.

Literature Review		Theme	Participant Feedback			
Quotes	Sub-theme		Sub-theme	DPC	BB	SF
"In addition, enabled by new technologies, new market entrants offer new and improved services that are traditionally not offered by the industry. Thereby, they force large financial services firms to also embed new technologies and offer new and competitive services." (Das et al., 2018)	New Entrants	Landscape Change	New Entrants	"[We] used to view our competitive landscape very much as the other incumbent financial institutions. It's no longer that It's retailers, it's MNO's, it's FinTechs and its other industries that disintermediate us from our customers"	"We've got new entrants. Digital bank entrants. We've got non-financial services incumbents that are encroaching on Financial services offerings to their consumer base in a large way".	"The Sector has evolved to include in a larger number of both, direct- and indirect- subsequent competitors and the barrier to entry to keeping a banking license and providing financial services has dramatically dropped and radically dropped in terms of cost'.
"...technological novelty and complexity of projects can significantly increase project uncertainty yielding suboptimal project performance." (Qazi et al., 2021)	New Technology		New Technology	"How do you keep pace with the way that they (customers) do things and the kind of technology that they want to do those things on or with".	"Pursue, most of the time with high velocity and through new ways of working, the digitization of **subject bank by leveraging disruptive technology to deliver commercially viable human-centred digital solutions".	"An absence or a limited understanding as to what the future financial services [landscape] is going to look like in the context of digital[isation]".
"Firms seek to develop and maintain a competitive advantage, which empowers them to keep competitors at bay" (Rahimnia & Molavi, 2021)	Competition		Competition	"a lot of our competitors, obviously they get stuff done quicker, and also have the ability to do more transactions and onboard more clients. So, their approach to how they mitigate the risk, take on risk, and they just said overall risk management as a little bit different to ours".	"[Our] ability to make decisions quickly, in relation to, [...] our competitors".	"We tend to want them to do things that [our] competitors and our indirect competitors don't ask them to do".
"There is a rapid change in the needs, wants and the expectations of the customers. Hence, what would have pleased and amazed them a short while back, might not satisfy them now" (Rizwan et al., 2014)	Customer Needs		Customer Needs	"Think how, an organization can keep pace with the amount of innovation and change in customer behaviour from a risk point of view is important, [we need to] change as quickly as our customers want us to change".	"We make it very difficult for customers to trade with this, based on our, quite a restrictive sort of view on risk".	"I think what we did was we typically designed. Solutions for our customers around the ideal user experience".
"...the content and the running of the risk management process will change. Therefore, existing instruments and measures must be adapted" (Tupa et al., 2017)	Governance/ Policies and Frameworks	Risk Management Framework	Governance/ Policies and Frameworks	"(the risk management function) needs to demonstrate to the people that are trying to innovate, how they can be flexible and find ways to work with those people when they're innovating. That pushes the boundaries, innovates, proposes new frameworks and participates in innovative working groups".	"Trying to go to certain risk forums or ticking certain governance steps, the committees are not part of the journey, which it's, almost it's sort of it. It is a barrier, but it takes a bit harder steps to move fast".	"We've actually had substandard experiences, relative to, let's say, best in class, because the risk elements within that place a very onerous requirement on the user".
"Less is known about the nature of such barriers for disruptive innovations within large financial services firms. This is especially relevant since such firms are continuously challenged by new legislation aimed at market stability and competitiveness" (Das et al., 2018)	Interpretation of Legislation		Interpretation of Legislation	"Let's understand what's the various legal and contractual obligations we have to clients are, let's understand what NCA prescribes for example from a credit product perspective and providing statements. And let's see how we can achieve this while we still stay within the ambit of all the regulatory considerations that we have".	"It would be great to actually acknowledge that listen we are a bank. We are highly regulated. If we're building something within the bank, you know there are various risk perspectives that need to be considered".	"You know the fact is, the legislative frameworks that we interpret from a risk management point of view, our sets, but different organizations seem to interpret them differently".
"One clear trait of successful ERM programs has been their effectiveness in drawing on and making use of expertise from all parts of an organization. Currently, there is no single professional group or association that is seen as a clear leader in ERM. The reason is straightforward: whereas professions are usually organized around a single skill set, such as insurance, accounting, actuarial science, or valuation, ERM requires extensive ongoing input from all these disciplines and from marketing and operations as well". (Fraser & Simkins, 2007)	Organisational Structure		Organisational Structure	"Operating model must facilitate partnership and collaboration between all the parts of the value chain".	"We had a full stack squad which was resourced with people from security from the risk and compliance teams from the fraud community and we would actively develop solutions with them, and in doing that, we were able to prove that if you bring all these specialized competencies into the conversation all the way from the start, starting from how do you craft this journey? What are the key things you need to do?"	"I would say you know involving it in the inception of a project, so it understands you know how it's how it's supposed to interact with other functions and other parts of the structure in order to yield a better experience and ultimately you know, deliver on our mandate".

Literature Review		Theme	Participant Feedback			
Quotes	Sub-theme		Sub-theme	DPC	BB	SF
"The interviewees generally believed that while risk management is appropriate in the later stages, participants need to be encouraged to champion ideas in creativity stage." (Bowers & Khorakian, 2014).	(Timing of) Formal Inclusion	Risk Role	(Timing of) Formal Inclusion	"Risk should be involved right up front in assessing the risk from a business case perspective and the risk of not achieving the business outcomes, and looking at the market risk, and the risk of competitive responses to what we want to do. And you know, just de-risking the initiative right from the ideation phase".	"It's very interesting to actually present, or to have risk at the table when Roadmaps and strategies are being defined".	when we want to do something new or innovative. I really do think that Risk should be a part of those initial ideation sessions. Even in the planning sessions and then innovations sessions. "having it core to the, what we would call the Sprint zero phase"
"successful implementation of a firms' innovation depends much on the effective combination of knowledge across departments" (Duong & Swierczek, 2019)	Risk Management Partnership		Risk Management Partnership	"I think the risk team plays an absolute balancing act right, because on the other side of the scale, you know the risk guys have always been seen in a negative light, as blockers to growth, and I think the risk team can be your friend when you have sort of scenarios that can blow up to an extent that destroy all your brand value and trust".	"The bank needs to have sufficient capacity and structures in place. To assign people into those roles and to empower them in those roles. You know to fulfil that function, but also create support structures for them".	"You know the risks. I know the reward' and if we work together with some sort of decision tree, or metric or something we can identify the risk".
X	Risk Management Mandate	Risk Accountability	Risk Management Mandate	X	X	"I think there is a confusion sometimes with the mandate that risk has. Which probably is causing more issues than the process. The business owner, me as an example, will be charged with [owning] risk, right? So, risk, just like compliance, is my responsibility and I'm always first level[line] right?"
"significant factor that can increase innovation in organizations is the speed of strategic decision-making, [...] dilemmas can arise owing to delaying decisions too long, resulting in lost opportunities to reap the benefits of new ideas". (Rahimnia & Molavi, 2021)	Time Pressure (Leadership Tone)		Time Pressure (Leadership Tone)	"If you don't have that risk mindset as part of the design process, you will be delayed and there will be somebody who will go to market quicker than you".	"We'd come up with ideas, and then only push it through a risk committee and funnel [...] after the effect, and then you actually close off the idea".	"If we don't get our heads around that a lot faster, yeah, we will come to the point where it is too late to pivot effectively and will end up as a high cost, low margin organization, relative to peers".
"Corporate executives might hesitate to take advantage of a cloud computing system because they can't keep their company's information under lock and key". (Sareen, 2013)	Cybersecurity Risk	Risk Understanding	Cybersecurity Risk	"Cybercrime is probably the biggest risk to us as a business [...] that in turn means the biggest risk to us, is that we lose trust".	X	X
It's in their interest to employ the most advanced techniques to protect their clients' data (Sareen, 2013)	Conduct Risk		Conduct Risk	"All of us in that organisation that need to change our mindset, in terms of driving a customer [-centric outcome]. But obviously doing it securely and simple, etc."	"There are various risk perspectives that need to be considered. You know, I mean data privacy, change controls, all [...] the various acts you need to comply with. Being able to bring that forward and formalising that into and innovation"	"We can't do good if we actually lack the capability to serve the customer because we've excluded them from our banking scope".

Appendix D – Digital Implementation Framework (Digital Ways of Working)

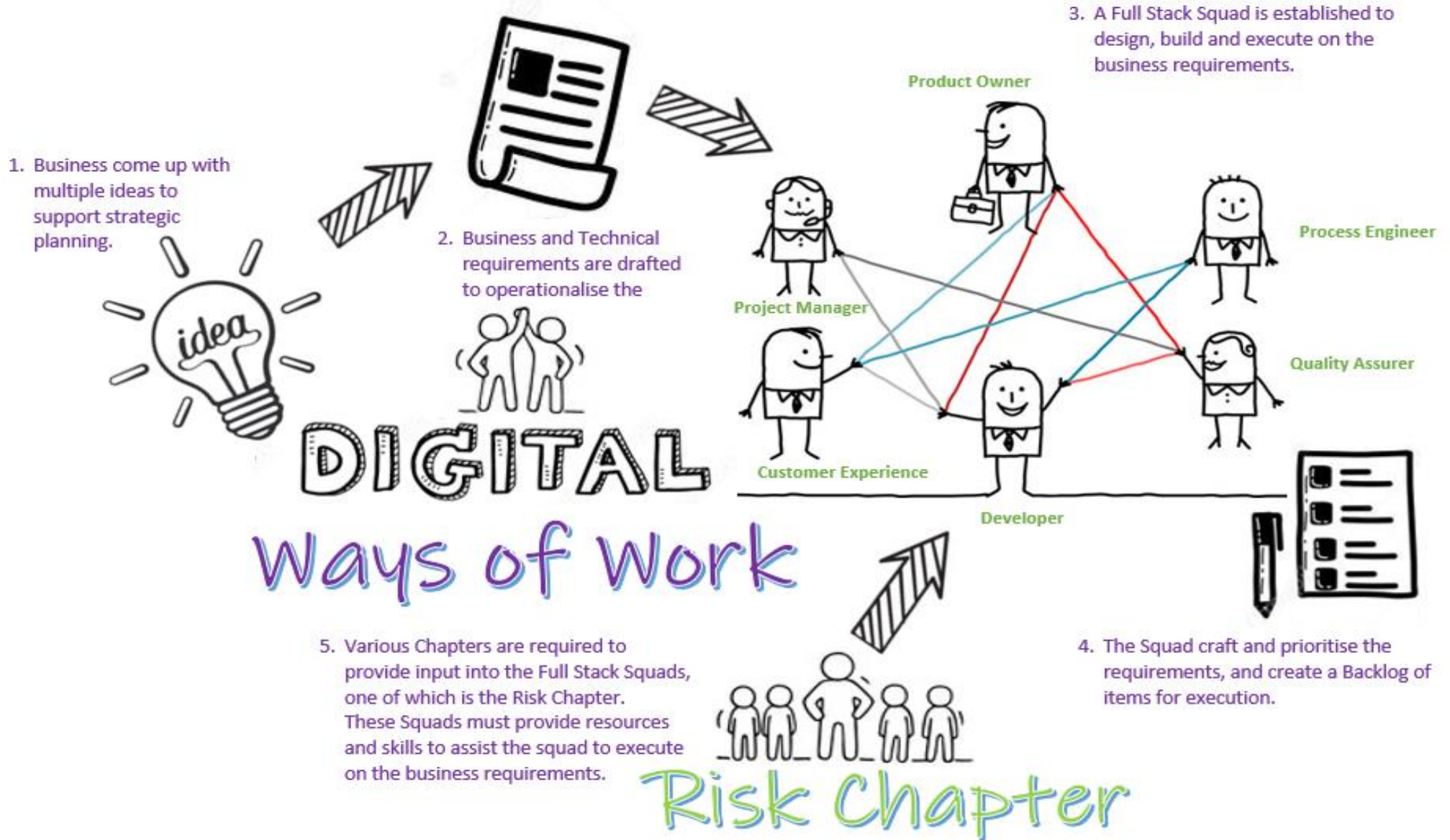


Figure 2: Diagram showing the organisation's digital implementation methodology.

Appendix E – Staff Hierarchy – Sampling

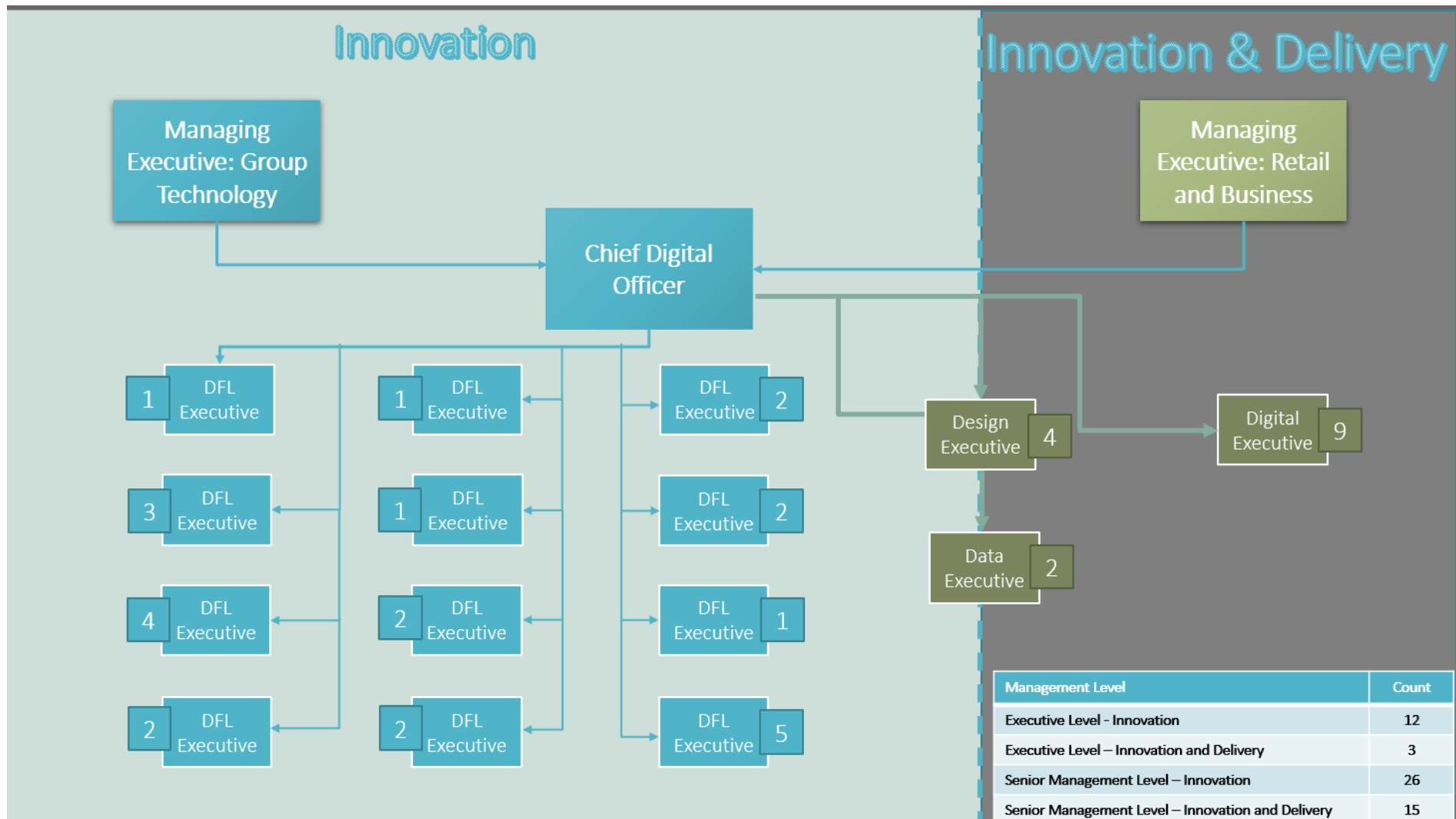


Figure 3: This diagram provides a view of the Chief Digital Officer's structure, with the Digital Fast Lane (DFL) division in the innovation segment, and the Digital Products and Channels (DCP) division in the execution segment.