VALIDATING A RISK CULTURE INSTRUMENT FOR THE BANKING SECTOR IN SOUTH AFRICA

by

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Abstract

Compliance failures remain a big challenge within the financial services sector, despite various regulatory reforms after the 2008 global financial crisis. However, risk culture, a key consideration in sound risk management, remains poorly measured in South African banks, even though banking institutions acknowledge its importance. This study followed a quantitative survey approach, whereby one prominent South African bank was selected to validate a risk culture instrument. The study aims to develop a comprehensive risk culture instrument and carry out a validation process that measures risk culture accurately within banking institutions. A sample of 379 employees in the risk field completed a questionnaire containing 46 closed-ended items. The instrument was found to have six distinct constructs that measure risk culture. Using exploratory and confirmatory factor analysis, the constructs were validated as reliable and valid measures of risk culture in a bank. This means future researchers could use this instrument to further research the influence of risk culture on an organisation's performance and success. This valid and reliable research tool enables managers in financial institutions to accurately measure risk culture constructs in order to make well-informed risk management decisions. Banks can thus enhance their risk culture through effective communication, good governance, employee incentives, competencies, compliance with regulations, and enhanced controls to mitigate risks.

Keywords: risk culture; risk management; instrument validation; banking sector, South Africa

Manweledzo

U kundelwa u tevhedza zwi kha ḓi vha khaedu khulwane kha sekithara ya tshumelo ya masheleni, naho hu na tshanduko dzo fhambanaho dza ndaulo nga murahu ha dziedzi ya zwa masheleni ya dzhango ya 2008. Fhedzi, mvelele ya khohakhombo ndi tshithu tsha ndeme tshine tsha tea u dzhielwa nṱha kha ndangulo ya khohakhombo i pfadzaho, i dzula yo elwa lu sa pfadzi kha bannga dza ḽa Afrika Tshipembe, naho zwiimiswa zwa u bannga zwi tshi dzhiela nṱha ndeme yayo. Ngudo i tevhedza maitele a ṱhoḓisiso dza khwanṱhithethivi, hune bannga nthihi khulwane ya Afrika Tshipembe yo nangiwa u khwaṱhisedza tshishumiswa tsha mvelele ya khohakhombo. Ngudo dzo pika u bveledza tshiimiswa nyangaredzi tsha mvelele ya khohakhombo na u bveledza maitele a u khwaṱhisedza ane a ela mvelele ya khohakhombo zwavhuḓi nga ngomu kha zwiimiswa zwa dzibannga. Tsumbonanguludzwa ya vhashumi vha 379 vha re kha zwa khohakhombo vho ḓadza mbudzisombekanywa dzi re na mbudziso dza 46 dza phindulo nthihinthihi. Tshishumiswa tsho wanala tshi na miṱalukanyo ya rathi yo fhambanaho ya u ela mvelele ya khohakhombo. Musi hu khou shumiswa musaukanyo wa u sedzulusa, miṱalukanyo yo khwaṱhisedzwa sa ya vhukuma nahone yo teaho u itela maga a mvelele ya khohakhombo banngani. Hezwi zwi amba uri vhaṱoḓisisi vha nga shumisa tshishumiswa itshi kha ṱhoḓisiso u vhona ṱhuṱhuwedzo ya mvelele ya khohakhombo kha kushumele na u bvelela ha dzangano. Tshishumiswa tsho teaho tsha vhukuma tsha ṱhoḓisiso tshi konisa vhalanguli kha zwiimiswa zwa masheleni uri vha kone u ela zwavhuḓi miṱalukanyo ya mvelele ya khohakhombo u itela u dzhia tsheo dzo dziaho dza ndangulo ya khombo. Dzibannga dzi a kona u khwaṱhisedza mvelele yadzo ya khohakhombo nga kha vhudavhidzani vhu vhuedzaho, vhuvhusi havhuḓi, magavhelo a vhashumi, vhukoni, u tevhedza ndaulo na ndango dzo khwaṱhisedzwaho u itela u fhungudza khohakhombo.

Maipfi a ndeme: mvelele ya khohakhombo, ndangulo ya khohakhombo, u khwaṱhisedza tshishumiswa, sekithara ya bannga, Afrika Tshipembe.

Tshobokanyo

Go palelwa ke go obamela melao go tswelela go nna sekgoreletsi se segolo mo lephateng la ditirelo tsa matlole le fa ga jaana go tlhamilwe melao ya taolo e e mmalwa morago ga mathata a matlole a a neng a ama lefatshe lotlhe a 2008. Le fa go le jaana, botlhokomedi jwa kotsi joo e leng ntlha ya kakanyetso e e botlhokwa mo botsamaising jwa kotsi, bo tswelela go ka lekanyetswa kwa ntle le tshiamo mo dibankeng tsa Aforika Borwa, le fa e le gore dibanka di lemoga botlhokwa jwa jone. Dithuto tse di dirisitse mokgwa wa patlisisobontsi moo nngwe ya dibanka tse di tlhomologileng mo Aforika Borwa e neng e tlhophilwe go ka netefatsa sediriswa sa botlhokomedi jwa kotsi. Maikaelelo a dithuto tse ke go tlhama sediriswa se sa botlhokomedi jwa kotsi se se akaretsang mme gape se tsamaise thulaganyo ya go netefatsa eo e lekanyang ka tlhomamo botlhokomedi jwa kotsi ka fa ditheong tsa go banka. Sampole e ne ya tsewa ya badiri ba ba 379 bao ba dirang mo lekaleng la botlhokomedi jwa kotsi mme ba ne ba tlatsa foromo e e nang le dipotso tse 46 tse di sa tshwaraganang. Sediriswa se se fitlhetswe se na le dikgopolo di le thataro tse di farologaneng tseo di lekanyang botlhokomedi jwa kotsi. Ka go dirisa thanolo ya dintlha ya patlisiso le ya tlhomamiso, dikgopolo tse di ne tsa netefatswa fa di tlhomame ebile di akanyega mme gape di lekanya botlhokomedi jwa kotsi mo bankeng. Se se kaya gore babatlisisi ba kwa isagong ba ka dirisa sediriswa se go ka batlisisetsa kwa pele tlhotlheletso ya botlhokomedi jwa kotsi mo tiragatsong le dikatlego tsa setlamo. Sediriswa sa bobatlisisi se se netefaditsweng ebile se ikanyegile se kgontsha batsamaisi mo ditheong tsa matlole go ka lekanya ka tlhomamo dikgopolo tsa botlhokomedi jwa kotsi gore ba dire ditshwetso ka kitso malebana le botsamaisi jwa kotsi. Ka jalo dibanka di ka tokafatsa botlhokomedi jwa kotsi ka tlhaeletsano e e siameng, puso e e siameng, dithotloetso tsa badiri, bokgoni, go obamela melao, gammogo le tokafatso ya ditsamaiso tsa go fokotsa dikotsi.

Mafoko a a botlhokwa: botlhokomedi jwa kotsi; botsamaisi jwa kotsi; netefatso ya sediriswa; lephata la banka; Aforika Borwa

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List of Abbreviations and Acronyms

ABC   Attitude–Behaviour–Culture (Model)

AVE   average variance extracted

CFA   confirmatory factor analysis

CFI   comparative fit index

CMIN/*df*   chi-square degrees of freedom

CR   composite reliability

EFA   exploratory factor analysis

EY   Ernst and Young

FNB   First National Bank

FICA   Financial Intelligence Centre Act 38 of 2001

GFI   goodness-of-fit index

HR   human resources

IIF   Institute of International Finance

IOR   Institute of Operational Risk

IRM   Institute of Risk Management

KMO   Kaiser–Meyer–Olkin

M   Mean

NFI   normed fit index

OTC   over the counter

PCA   principal construct analysis

PwC   PricewaterhouseCoopers

RM   risk management

RMSR   root mean square residual

RMSEA   root mean square error of approximation

SARB   South African Reserve Bank

SD   standard deviation

SEM   structural equation modelling

SPSS   Statistical Package for the Social Sciences

TLI   Tucker-Lewis index

UNISA   University of South Africa

VIF   variance inflation factors

CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1   INTRODUCTION

This chapter is an introduction to the study, which focused on validating risk culture measurements within a banking institution in South Africa. The chapter's main deliverables comprise an introduction background to the study and discuss the research problem. Under this is a discussion of the concepts of risk culture, specifically in the context of the banking industry. The remaining sections are a comprehensive elucidation of the delimitations of the research, together with the definitions of key concepts and the layout of the paper.

1.2   BACKGROUND OF THE STUDY

Compliance failure remains a global challenge in the banking sector, and many banking institutions are beginning to relook their risk management practices. According to a Fintech (2022:1) report, global regulators, in 2021, fined five large international banks — JP Morgan, Deutsche Bank, and Credit Suisse, amongst others, about US$1 billion in cases of money laundering allegations for failing to properly monitor their clients' banking activity. This means the task for financial organisations to remain compliant is still ongoing, despite the worldwide financial crisis of 2008, which resulted in enhanced concerns regarding risk management practices and the implications of these practices in the financial sector. Hence, the bid to enhance and maintain stability within financial systems has resulted in increased complexities in the banking system that pose significant regulatory challenges regarding risk control. According to Sheedy, Griffin, and Barbour (2017), the development of an accountable, proactive, and robust risk culture is an essential aspect of risk management responsibilities in the financial sector. However, some scholars have stressed the importance of a greater understanding of adherence to risk management requirements specific to risk culture.

According to Haviernikova and Betakov (2020), enterprise risk management, internal audits, contingency planning, and compliance are among organisations' top risk-management practices and activities. These functions constitute formal ways to identify and contain risks. Therefore, risk management policies such as transparency and disclosure are among the top drivers of confidence and protection for customers and investors (Mok & Saha, 2017). Nonetheless, some scholars have argued the importance of risk culture, asserting that a stronger risk culture enhances an organisation's ability to proactively identify and manage both broad and other risks associated with their businesses (Ward & Forker, 2017).

Several scholars contend that the solidity of a banking sector is vital, especially for a resilient financial system (Mok & Saha, 2017; Ward & Forker, 2017; Sheedy & Lubojanski, 2018). In line with this view, some researchers (Schmitt,2017; Ward & Forker, 2017; Corbae & Levine, 2019) argue that competition decreases the banking systems' stability, exposing them to more operational risks, especially at the macroeconomic level. Therefore, there is a need for effective operational risk management, which entails ascertaining and monitoring the risk culture in banks and designing and executing systematic quantitative practices for managing operational risks (Kunz & Heinz, 2021).

AuditBoard (2018) notes that operational risk has evolved, and familiar tools, methods, and management structures are applied in this field. Buch and Dages (2018) trace the roots of operational risk management in the past three decades when banks applied more focus on the importance of operational risks. Before this time, it was regarded as a residual risk because it was seen as hard to manage and measure. Notwithstanding this, banks were implementing it, but they were struggling to maintain the integrity of their internal controls, prevent crime, and lessen risks and mistakes in transactions (Organisation for Economic Co-operation and Development (OECD), 2017).

Many researchers who examined risk management and risk culture have noted an increase in research interest in risk culture and have linked risk culture to the global financial crisis of 2007– 2008 (Power, Ashby & Palermo, 2013; Gupta & Liu, 2017; Kunz & Heinz, 2021). The Financial Stability Board emphasised that one of the root causes of the global economic and financial crisis is linked to under-evaluated risk

culture (Andresen, 2013). Baijal (2018) posits that overestimated risk-taking goes hand in hand with risk-taking aspiration when it leads to increased organisational performance.

According to Cucunelli (2017), a financial institution's risk culture is determined by the risk-taking behaviours of individuals and groups. However, most financial institutions are oblivious to the significance of risk culture in their risk management functions (Corbae & Levine, 2019). Consequently, creating and maintaining a risk culture is a daunting task in most financial institutions, hence the need to develop a scale to measure it. Although the collection of data that is appropriate for measuring a financial institution's risk culture may be a difficult task, the development of methods to monitor, measure, and study risk culture might be worthwhile. Measuring risk culture will enable financial institutions to evaluate whether their efforts to shape and manage it are viable and effective. Banks (2012) observed that the well-established quantitative models and governance frameworks for risk management may not be compatible with risk culture since the behavioural aspects are still underdeveloped, unclear, and often theorised. As a result, researchers and international institutions have made considerable efforts to provide frameworks to study risk culture (Deloitte, 2009; Banks, 2012; Institute of International Finance (IIF), 2012; Institute of Risk Management (IRM), 2012; PricewaterhouseCoopers (PwC), 2012; Power *et al.*, 2013; Cucinelli, 2017; Institute of Operational Risk (IOR), 2019; Kunz & Heitz, 2021). These frameworks have shown great variances in the constructs and constructs of risk culture about the different domains. Hence, the need to validate risk culture measurements provided the rationale for the present study.

South African banks continue to show a complacent risk culture, evident in their continuing to face fines for non-compliance. *News24* (2021) reported that the Reserve Bank of South Africa (SARB) fined ABSA Bank an administrative fee of R100 000 for failing to submit its over-the-counter (OTC) derivatives business report despite ABSA having an OTC derivatives provider licence since 2020. One of the licence conditions stipulates that OTC derivatives must present a report from an independent auditor regarding its procedures, systems, and capacity to report all its OTC derivatives transactions to the SARB within six months of licensing, thereafter annually (*News24,* 2021). The South African Reserve Bank (SARB, 2022) continues to fine financial

institutions operating in South Africa for various non-compliance issues, as shown in Table 1, which lists banks that were fined more than once in the past eight years.

Table 1.1: SARB fines of Banks (2014–2021)

Year	Bank	Amount	Nature of Non-compliance
2014	ABSA Bank	R10 million	Know your customer and record keeping
2014	Standard Bank	R60 million	Know your customer
2015	Deutsche bank	R10 million	Internal rules
2016	ABSA Bank	R10 million	Inadequate processes and working methods
2016	Standard Bank	R10 million	Know your customer
2019	Standard Bank	R30 million	Suspicious, unusual transactions
2021	Deutsche Bank	R38 million	Clients' identification

Source: SARB (2022:1)

At least 11 other institutions and the repeat offenders shown in Table 1.1 have been fined sums over R200 million over the period reviewed for non-compliance with the Financial Intelligence Centre Act (FICA) No. 38 of 2001 (SARB, 2022). The banks did not have stringent measures and policies to adhere to and comply with FICA regulations. Control failures suggest that organisations fail to understand risk culture (SARB, 2022). Such continued global and local non-compliance by financial institutions has led to considerable resources and time devoted to understanding the pivotal role of risk culture as a significant driver of appropriate risk behaviour (Osman & Lew, 2020). According to Miller (2022), these incidents resemble institutional failures and losses because of insufficient risk management controls and systems and a lack of institutional risk culture. As such, over the last decade, financial institutions have often been regarded as the least trusted businesses (Ghafoori, Mata, Lauren, Faulkner & Tear, 2022). To avoid the control failures that result in organisations being forced to pay significant regulatory fines or facing compliance incidents, several corporate bodies contend that an understanding of risk culture is the foundation for the effective

management of risks (Financial Stability Board, 2014). The IIF (2012) notes that developing a risk culture within the organisation is the most essential tool for effective risk management.

A study by the African Institute of Financial Markets and Risk Management in 2017 showed that the big four South African banks — Standard Bank, First National Bank (FNB), Nedbank and ABSA, Nedbank — contribute significantly to the systemic risks prevalent in the sector. A systemic risk ranking model was subsequently developed, showing that the big four banks contribute 64% of the systemic risk in the sector, putting the sector at risk. Since the big four banks have the largest market share of about 89% (SARB, 2022:2), understanding operational risks and how these should be dealt with in the sector is important. Considering the prevalence of risks in the sector and the contributions of the big four banks to the economy, the current study focused on validating a risk culture measure using a sample at one of the biggest banks in South Africa.

Risk is defined as some extent of uncertainty about the outcomes of an activity that is valued and managed by people and organisations (Aven, 2016:2). As such; a financial institution perceives exposure to risk in activities in terms of liquidity risk, tactical risk, strategic risk, governance risk and operational risk. Risks associated with fraudulent activities and system disruptions are termed operational risks, while those associated with transparency and accountability in the decision-making process are termed governance risks. (Sheedy *et al*., 2017). Consequently, financial institutions need to navigate these risks while maximising and sustaining their financial performance when, for example, the provision of customer loans. This means there is a need for continued balance as far as performance and opportunity are concerned to reduce harm and ensure control. (Osman & Lew, 2020). Research has shown that a fall in the balance, usually towards opportunity and performance and at the expense of harm reduction and control, has often resulted in large-scalable financial crises. These crises have resulted in the subsequent need for financial institutions to improve and enhance their risk culture. (IRM, 2012; Financial Services Board, 2014). More importantly, understanding an institution's risk culture is important in ensuring balance, as do monitoring and appraising it. According to Ghafoori *et al*. (2022), culture refers to an emergent social phenomenon based on the complex interaction of various individual values, behaviours, norms, and attitudes in large groups. The concept of

culture is mainly situated in organisational research studies. Miller (2022) posited that successful organisational change requires understanding the business environment, which comprises both the psychological and the social environment. Sheedy *et al*. (2017) define risk culture as employees' overall view of the priorities and attitudes of their colleagues towards risk management approaches, as well as their understanding of the values and practices related to risks. The risk culture literature suggests that organisations that harness a sound risk culture show evidence of better risk behaviours through the implementation of advanced risk management systems, appropriate risk-taking measures, and evidence of resilience in adverse situations. However, there is no clarity regarding the evaluation and tracking of changes over time and in response to key events (Fritz-Morgenthal, Hellmuth & Packham, 2015). This indicates the importance of using appropriate tools in developing and evaluating a risk culture programme. In this context, leaders in organisations must have adequate instruments to develop and evaluate a risk culture programme.

Therefore, organisations are encouraged to utilise tools that are validated and comprehensive in measuring risk culture before signing and implementing risk culture programmes. This is important because a consistent evaluation and improvement of risk culture largely depend on the comprehensiveness of the tools used to capture data (Ghafoori *et al*., 2022).

1.3   PROBLEM STATEMENT

Researchers like Fritz-Morgenthal *et al*. (2015), Glafoori *et al*. (2022), and Osmon and Lew (2020) have posited that the lack of risk culture is a key contributor to banking scandals and acts of non-compliance. Whilst the problem of risk culture has been acknowledged, financial institutions have only relied on management consultants' measurement of risk culture, such as the IRM's (2012) frameworks and models, which may not be scientifically valid and reliable measurement scales. The problem is that financial institutions continue to use risk culture instruments that may not be adequate to inform the development of interventions that will improve the organisation's risk culture (Glafoori *et al*., 2022). Therefore, the main purpose of this study was to evaluate the validity and reliability of the IOR Risk Culture Scale (2019) using a sample drawn from a major South African financial institution.

1.4 RESEARCH OBJECTIVES

The primary objective of the study was to examine a valid and reliable risk culture instrument for use in the banking industry of South Africa. To achieve the primary objective, the following secondary objectives were addressed:

- To identify constructs related to a risk culture measurement in the banking sector through a literature review.
- To determine the factorial structure of constructs related to a risk culture measurement instrument.
- To ascertain whether the data fit the empirical model through structural equation modelling.

1.5 RESEARCH QUESTIONS

The primary research question was: Is there a reliable and valid risk culture instrument for use in the South African banking sector?

To achieve the primary research question, the following sub-questions led to the research enquiry:

- What are the constructs related to a risk culture measurement in the South African banking sector?
- What is the factorial structure of constructs related to a risk culture measurement instrument?
- Does the data fit the empirical model through structural equation modelling?

1.6 RESEARCH PURPOSE

The primary purpose of the study was to validate the IOR's Risk Culture Scale (2019) measurement instrument for use in the banking industry of South Africa using literature review, factorial analysis and structural equation modelling.

1.7   SIGNIFICANCE OF THE STUDY

This study's importance is to add to the body of knowledge in the academic literature by determining the reliability and validity of a risk culture scale, which financial institutions could use to effectively measure and improve their risk culture indicators. Thus, banks can use a proven tool to measure their risk culture rather than 'tick-box' tools that lack comprehensiveness. The outcomes are relevant to the body of knowledge as they assess the necessity of a valid risk culture scale when evaluating the impact of culture on risk management.

1.8   RATIONALE OF THE STUDY

The study's rationale is the need for a valid and reliable risk culture measurement instrument that banking institutions can use to effectively measure their prevailing risk culture to inform sound risk management practices. Using a sample from a large South African bank provides a suitable research ground to effectively test the risk culture measurement within its environment of continual institutional failures in compliance and deficient risk management. The study provides insights into risk culture — which risk culture factors to identify, manage, control, and improve — which may be valuable to risk managers, industry professionals, and employees.

1.9   RESEARCH METHODOLOGY

The research methodology adopted is explained as follows:

1.9.1   Research design

This study adopted the descriptive study design, which allows a comprehensive, multi-faceted examination of complex phenomena by obtaining data from real-life settings (Saunders, Thornhill & Lewis, 2019:15). The decision to adopt the descriptive study design was constructed using the fact that it would allow the researcher to collect data from bank personnel.

The positivism paradigm was adopted in this study because of its relatedness to a quantitative approach. This paradigm was considered suitable for the study's main

objective, validating a risk culture research instrument. A positivist paradigm holds that reality can be understood objectively and best explained using numerical data that are statistically analysed (Coolican, 2017; Gravetter & Forzano, 2018). A questionnaire consisting of closed-ended questions, rated on a five-point Likert scale, was utilised to collect quantitative data, which were statistically analysed.

1.9.2   Research approach

The quantitative research approach was considered suitable for the present study, as the aim was to validate a risk culture research instrument. The quantitative approach entails gathering data in numerical form, which data is then statistically analysed to determine relationships between constructs, which are represented using graphical and tabular views (Saunders *et al.*, 2019).

The deductive approach was adopted for this study, which, according to Saunders *et al.* (2019), entails reasoning from the specific to the general and is suitable for quantitative research.

1.9.3   Research Strategy

The present study adopted the survey strategy, which was appropriate because the research focused on the risk culture of only one commercial bank in South Africa. A survey enables the researcher to gather data from a large sample. Another advantage of the survey strategy is that it offers verifiable data (Quinlan, 2019). Furthermore, a survey can be conducted remotely (Yin, 2017), as was done in the current study, which was conducted via an online Microsoft Forms link.

1.9.4   Time horizon

A cross-sectional time horizon was adopted for this research. Cross-sectional studies involve collecting data at one point at a time, whilst longitudinal studies involve collecting data at intervals over some time to enable comparison (Saunders *et al.*, 2019). The study adopted a cross-sectional approach because of time and financial constraints.

1.9.5 Population and Sample

The population refers to all units of interest related to the topic under study, from which a representative sample is drawn (Saunders *et al*., 2019). The present study's population consisted of 30 000 workers at the South African bank at which the study was conducted. Using the convenience sampling technique, study participants are selected for ease of access (Saunders *et al*., 2019). Non-probability sampling means that not all members of the population have an equal chance of being selected for participation in the study. The sample for the present study was drawn from different organisational levels: junior, consultant/specialist, manager, and executive leader, and all respondents' roles were related to determining and fostering the risk culture of the bank. According to the IOR (2019), a sample that enables stratification of responses helps the researcher to identify existing sub-cultures. Using the statistical formula of Krejcie and Morgan (1970), the required sample of 379 respondents was calculated.

1.9.6 Data collection method

The present study administered a questionnaire on the sample from a South African bank to collect data. The instrument was based on constructs developed by the IOR (2019). The instruments were combined and adapted to measure six risk culture constructs: *Incentives*, *Competence*, *Governance*, *Compliance risk*, *Control*, and *Communication*. Respondents participated by responding to the items on a five-point Likert scale ranging from "Strongly agree" to "Strongly disagree". The instrument comprised two sections. Section A contained two items relating to respondents' demographics, while Section B contained 46 items to determine the risk culture in the bank.

1.9.7 Data analysis

To analyse data, the present study used the Statistical Package for the Social Sciences (SPSS) version 28. Demographic data were analysed to provide a profile of the respondents. The instrument validation statistics comprised missing values case processing, item analysis, exploratory factor analysis using the principal Construct analysis, discriminant validity, construct validity, and confirmatory factor analysis using

structural equation modelling, as recommended by Hair, Hult, Ringle and Sarstedt (2019).

1.10   Delimitation of the Study

According to Saunders *et al*. (2019:13), delimitations relate to characteristics that define the study boundary and limit the scope of a study. In the current study, a sample from one large South African bank was used. The IRM (2012) and IOR (2019) risk culture frameworks and models guided the research, as these are used in most banks and considered best practices in South African banks. These frameworks and models are discussed in detail in Chapter 2.

1.11   ETHICAL CONSIDERATIONS

Quinlan (2019) proposes several ethical principles that must be adhered to in conducting research, which was upheld in the present study:

- The researcher has to protect all participants from harm.

- All participants' dignity has to be upheld and given priority.

- Before the study, the researcher should obtain informed consent from all participants.

- Participants' anonymity has to be protected. No personal details of participants may be made public.

- Any communication about the research has to be done transparently and honestly.

- The data findings should not be biased, and every effort should be made to ensure that a well-balanced view is presented.

The abovementioned principles were communicated during the distribution of the questionnaire. The objective of the research was clarified to the participants. It was further clarified that the participants were free to withdraw from the study at any point during the data collection. The respondents were not requested to provide highly personal information, and no personal identifiers were used in reporting the results. The researcher obtained written permission from the bank under study and ethical

clearance from the University of South Africa (UNISA) to carry out this study (See Appendix 2).

1.12   STRUCTURE OF THE STUDY

This dissertation comprises five chapters:

- Chapter 1 introduced the study's main purpose, including background and context, purpose and rationale, the problem statement and the objectives, and the delimitations.

- Chapter 2 provides a literature review covering previous research and theories about risk management, risk culture, and measurement of risk culture.

- Chapter 3 details the research methodology followed in the study.

- Chapter 4 presents the results and a detailed discussion of the results.

- Chapter 5 provides a summary of the outcomes of the study as well as a presentation of conclusions and recommendations.

1.13   CHAPTER SUMMARY

Chapter 1 provided the study's introduction, background, and problem statement. This was followed by the research purpose, objectives, and rationale for the study. The remaining sections explained the delimitations of the research and the chapter layout. The next chapter provides a detailed analysis of the literature on risk culture.

CHAPTER 2

LITERATURE REVIEW

2.1   INTRODUCTION

This chapter is a presentation of literature in the body of knowledge obtained through searching academic and management databases using the keywords "risk culture", "risk management", "risk culture theories", "risk culture frameworks", and "risk culture measurement". The discussion of the literature includes agreements, disagreements, and existing gaps. The literature includes the conceptualisation of risk culture, risk theories, risk frameworks, and measurement of risk culture. The chapter ends with a presentation of a conceptual framework.

2.2   RISK CULTURE CONCEPT

Several definitions of risk culture can be found in the literature. Among the earliest definitions is that of Bozeman and Kingsley (1998:110), who defined risk culture as "the organisation's propensity to take risks as perceived by the managers in the organisation", thus emphasising the desire of management to take risks. Risk culture has been studied by banks (Geretto & Pauluzzo, 2015), financial regulators (Gorzeń-Mitka, 2015), insurance companies, and consultancy firms. However, it is important to note that there are debatable definitions of organisational culture and, specifically, risk culture. Risk culture is important in the financial sector because of the many risks the business can face, such as credit risk, liquidity risk, currency risk, interest rate risk, or asset-backed risk.

According to Sheedy *et al*. (2016:5), risk culture is "the shared perceptions among employees of the relative priority given to risk management, including perceptions of the risk-related practices and behaviours that are expected, valued, and supported". Similarly, the IRM (2012:163), whose framework is utilised the most by financial institutions, describes risk culture as the "values, beliefs, knowledge and understanding about risk shared by a group of people with a common intended purpose, in particular, the leadership and employees of an organisation". Both

definitions indicate that risk culture is a key construct that shapes how risk management can be implemented effectively within an organisational culture. The IIF (2012:24) defines risk culture as "the norms and traditions of the behaviour of individuals and of groups within an organisation that determine how they identify, understand, discuss, and act on the risks the organisation confronts and the risks it takes". This means that the extent to which an organisation's culture encourages or limits risk-taking activities and behaviours, as well as the opportunities that are associated with those risks, determines its risk culture (Power *et al*., 2013). Thus, it is essential to understand the internal and external factors when analysing and evaluating the risk culture of a financial institution (McConnell, 2013).

Before advancing to the various theories of risk culture, culture as a concept requires elucidation. According to Hillson (2013), culture refers to shared common beliefs, values, understanding, and knowledge among people with a related purpose. Hence, culture is perceived as a result of past experiences that influence the attitudes of individuals, both present and future (Carretta, Farina & Schwizer, 2017). In other contexts about behaviour, culture is understood as the social behaviour, values, and norms within a group that influence the group's collective behaviour (Baijal, 2018). The Attitude–Behaviour–Culture (A-B-C) Model of Hillson (2013) can be used to explain culture. The model indicates that an organisation's culture emanates from the behaviour of the members of the organisation and their underlying attitudes (Hillson, 2013).

This model is characterised by its feedback loop from *Culture* to *Attitude* and *Behaviour*. This means that the organisational culture plays an important role in organisational performance since its members are influenced by shared values that drive the behaviour of its members towards achieving organisational goals. These interdependencies show that an organisation can manufacture a self-reinforcing feedback loop to strengthen the right attitudes and encourage desired behaviours (Hillson, 2013). Therefore, this basic concept of organisational culture may be adopted to explain risk culture.

In essence, risk culture may be viewed as an aspect of the organisational culture; hence, risk culture is the outcome of the impact of culture on risk management (Power *et al*., 2013) and provides organisational knowledge and understanding of what is

effective and ineffective, based on past experiences. According to the IRM (2012) and the IOR (2019:5), risk culture is influenced by the prevailing knowledge, beliefs, attitude, values, and understanding of risk that a group of people shares with a common purpose. These aspects thus influence perceptions of risk management, its perceived importance, and how it is managed (IRM, 2012).

The FSB (2014) also regards risk culture as attitudes, behaviours, and norms that are associated with risk management and risk awareness. The existing risk culture should support the goals and objectives of the organisation. Thus, an organisation needs the right culture to succeed (Power *et al*., 2013). However, organisations must develop their own risk culture that is compatible with their goals and objectives (Gorzeń-Mitka, 2015). The organisation achieves a good risk culture when a firm is focused on risk-taking coupled with risk control. The risk culture ultimately affects how employees perceive the operational risk — whether it is beneficial or a threat and whether it is a cost or a benefit (IOR, 2019).

Schmitt (2017) argues that corporate risk-taking activities when dealing with uncertainty, influence its risk culture. The role of risk culture in corporate risk-taking is crucial in the performance of financial institutions (Gorzeń-Mitka, 2015). In addition, risk management forms the foundation for competitive advantage in financial institutions through value created by risk-taking activities (Bozaykut-Bük, 2017). Similarly, Gorzeń-Mitka (2015) argues that an organisation must engage in risk-taking activities to create value. Consequently, the current business environment requires an understanding of risk culture. However, the debate regarding an accurate risk-culture measurement has continued among academic researchers for the past 20 years (Ashby, Permo & Power, 2012; Banks, 2012; Gorzeń-Mitka, 2015; Sheedy *et al*., 2017), revealing its importance in risk management for success. Hence, this research mainly focused on how risk culture can be correctly measured in organisations. The next section discusses the main risk culture theories in the literature.

2.3   RISK CULTURE THEORIES

The cultural theory of risk postulated by Bromiley, McShane, and Nair (2015) forms the basis of this study. The cultural theory proposes that many preferences that people have are due to the culture within which they choose to or are forced to live (Sheedy

et al., 2017). Bromiley *et al.* (2015) argue that the cultural theory holds that everything people do is culturally biased. It is possible to distinguish a limited number of cultural types based on aspects of individuals' and groups' risk culture, such as understanding, knowledge and attitudes. The risk culture influences how employees view risks and policies associated with risk management. More importantly, certain culture types are resistant to change, and that cultural bias can explain away anything that does not fit individuals' expectations (Sheedy *et al.*, 2017). Therefore, risk practitioners in organisations must understand the prevailing risk culture and can put controls that yield the right culture for the organisation. The following section discusses the main risk culture models and frameworks based on the culture of risk.

2.4 RISK CULTURE MODELS AND THEORETICAL FRAMEWORK

Within the financial services industry, professionals, consultants, and institutional agencies such as Deloitte (2009), PwC (2012), and the IRM (2012) have been driving the standardisation of the concepts related to risk culture beyond the theoretical analyses performed in academic research. As a result, literature on risk culture has progressed regarding the two aspects, empirical and prescriptive considerations. The main focus of research in the prescriptive thread is a reflection of the main aspects of the organisation that can be conceptualised into the organisation's risk culture, such as what a 'good' risk culture is and the means to embed it into the organisation. McConnell (2013) established a framework comprising six drivers: strategic perspective, risk perspective, resource, development of the organisation, risk appetite, and risk framework, and reflects the values and behaviour of managers, the activities of the employees, and the management system. Geretto and Pauluzzo (2015) emphasise the norms, values, and practices of organisational members whose activities contribute towards the organisation's risk culture. Sheedy *et al.* (2017) identified four common factors that play a role in risk culture, namely values, managers, proactivity, and avoidance, which the authors regard as the four essential constructs of effective risk culture. However, Power *et al.* (2013) warned the Financial Stability Board to be aware of the destructive pathways when promoting risk culture. These destructive pathways manifest in an organisation's risk culture not being beneficial to the success of risk management, avoidance of risk-culture assessment, and risk management viewed as a compliance exercise (IRM, 2012).

The approach to assessing an organisation's risk culture affects the type of method utilised by the organisation in risk management; therefore, an effective risk culture framework is required (IRM, 2012). Fritz-Morgenthal *et al*. (2015) posit that an effective risk culture framework includes the identification of the prevailing risk culture and accounts for any detailed features in research proposals in this domain and the considerations regarding a sound risk culture. The Risk Culture Framework conceptualised by Fritz-Morgenthal *et al*. (2015) identifies the risk culture indicators and addresses the construction of a risk culture dictionary and the development of a risk culture measurement instrument using unstructured data. The framework comprises a seven-dimensional construct: risk strategy, regulatory requirements, governance, employees, portfolio, reputation and work culture. *Governance* quality refers to adherence to process flows that top management has prescribed for adoption across the organisation (Fritz-Morgenthal *et al*., 2015). *Portfolio* describes the organisation's balance sheet and reflects the organisation's strategy and attitude towards risk exposure, risk management, and risk appetite (Fritz-Morgenthal *et al*., 2015). *Risk strategy* encompasses the governance and decision-making processes that the organisation has adopted to manage risk. The organisation's risk strategy must show adherence and consistency with regulatory requirements that are dictated by the financial institution in the risk strategy (Fritz-Morgenthal *et al*., 2015). Several risk culture frameworks have been offered that merge some constructs of effective risk management to produce a logical manner of measuring risk culture (Schmitt, 2017).

Most literature and management forums have stressed the importance of risk culture over the years (Sheedy & Lubojanski, 2018), and enterprise risk management is the leading discipline in which organisations seek consultation and includes risk management consultation and instituting a risk management structure (Sheedy & Lubojanski, 2018). During the consultation, managers are interviewed to determine their respective organisations' primary risk failures and challenges in implementing ERM (Mok & Saha, 2017). Based on responses from different stakeholders, management consultancy companies then develop risk culture frameworks by assimilating the primary risk failures and success factors into their frameworks (Schmitt, 2017).

The following section discusses four frameworks: the McKinsey & Company Risk Culture Framework, the PwC Risk Culture Framework, the IRM Risk Culture Model,

and the IOR Risk Culture Iceberg. Similarities and differences within the frameworks are identified, and the main constructs of risk culture are discussed.

2.4.1 McKinsey Risk Culture Framework

The McKinsey Risk Culture Framework (IIF, 2012) was proposed in response to an IIF (2012) report that highlighted the lack of risk culture as the cause of the failures that had brought the banking industry into crisis in the previous decade (Rampini, Viswanathan & Vuillerney, 2020). Risk culture is recognised as located at the heart of human decisions and interactions that influence the daily activities within an organisation (Mok & Saha, 2017). Thus, the McKinsey Risk Culture Framework (IIF, 2012:14) was developed to assist in minimising the complexities of understanding the risk culture within organisations. The framework is shown in Figure 2.1.

Groups	Dimensions	Low risk	High risk
Transparency of risk	Communication Tolerance Level of insight	Poor Unclear Lack of insight	Good Clear Good insight
Acknowledgment of risk	Confidence Challange Openness	Overconfidence No challange Fear of bad news	Confident but careful Constructive challange Reward honesty
Responsiveness to risk	Level of Care Speed of Response	Indifference Slow	Dilligence Fast
Respect for risk	Cooperation Adherence to Rules	Gaming Beat the system	Coordinating Play by the rules

Figure 2.1: McKinsey Risk Culture Framework

Source: IIF (2012:14)

The McKinsey Risk Culture Framework (IIF, 2012:14) is a diagnostic tool comprising two stages: core risk culture diagnostic and intervention design (Sheedy *et al*., 2017). The former comprises a custom-made survey of the organisation, in line with the framework. In this process, possible weaknesses and strengths are examined by evaluating the results per the categories. The latter depends on the results from the former and entails a root-cause analysis of the failures to generate solutions that can enhance the risk culture (Sheedy *et al*., 2017; Sheedy & Lubojanski, 2018). The four

groups of the framework, namely transparency, acknowledgement, responsiveness, and respect, were important considerations in the present study.

The framework puts forth vital success factors of robust risk culture. As stated by Kirikkaleli, Yaylali, and Safakli (2020), some factors included in the McKinsey Risk Culture Framework concern warning signs about internal and external constructs, clear risk-taking policy, attitude to risk management, adaptability to change, and the presence of sub-cultures. These factors are similar to the aspects of risk culture proposed by IOR (2019), namely sharing of risk management objectives, risk control assessment, the existence of sub-cultures, level of risk-taking, and knowledge and understanding of risk management. The constructs may assist an organisation in assessing its ERM practises. In addition, this framework is good for an enterprise to understand its risk universe and be able to contain its risk culture.

2.4.2   PwC Risk Culture Framework

The PwC framework is more comprehensive than the McKinsey framework (Kirikkaleli *et al*., 2020). The PwC framework also evaluates the human resources (HR) guidelines, risk management and control system effectiveness, and employees' capabilities. The framework accentuates that risk management does not just focus on instituting policies but also involves advancing a culture of doing the right thing, by the right people, at the right time (Sheedy & Lubojanski, 2018). As reflected in the PwC framework, the banking fraternity is entering an era of rising regulatory control, with a focus on reporting and decision-making (Sheedy *et al*., 2017). The PwC framework is shown in Figure 2.2.

Key Attributes	Sub Attributes	Key Indicators
Leadership & Strategy	Integrity and Ethical Values	Tone at the Top Personal Ethical Practices
	Communicate mission & objectives	Policies & Procedures Top-down alignment strategy
Accountability & Reinforcement	Assignment of Authority & Responsibility	Assignment of Ownership Demonstrated accountability
	Human Resource Policies & Practices & Performance Measurement	Performance Indicators Incentives & Discipline
People & Communication	Commitment to Competence	Employee Competence Training
	Information & Communication	Information Quality Top-down communication Communication across processes
Risk management & Infrastructure	Identify & Assess Risk	Risk Assessment Practices Risk tools & Processes
	Establish Process & Controls	Process Reliability & Efficiency Control Effectiveness & Efficiency System Access & Security

Figure 2.2: PwC Risk Culture Framework

Source: PwC (2012:33)

According to Sheedy *et al*. (2017), the main points extracted from the PwC framework are:

- Risk evaluation and controls need to be acceptable and dynamic in line with the needs.

- Adequate risk training must be provided to equip individuals with the required skills.

- Policies and other important information must be communicated openly and timely.

- Incentives must not depend on short-term objectives, and disciplinary actions must be applied correctly and when necessary.

While some aspects of the PwC framework relate to the McKinsey framework discussed earlier, there are a few similarities relating to the key attributes and indicators: information, communication and risk management.

The following section discusses the IRM's (2012) framework and model.

2.4.3   IRM Risk Culture Framework and Model

The IRM was one of the first institutions to propose using the concept of risk culture, and extensive literature subsequently followed (Hopkin, 2018; Hillson & Simon, 2020). The IRM (2012) put forth a model that relates, to some extent, to the McKinsey (2012) and PwC (2012) frameworks. The IRM's (2012) framework stresses the board of directors vital role in addressing an organisation's risk culture (Cole, Giné & Vickery, 2017). The board's role is to determine, transfer, and apply a risk culture that aligns with the organisational objectives (Cucinelli, 2017). The IRM (2012) framework indicates that the execution starts with cascading the appropriate attitudes and behaviours set by the board of directors to the lowest level in the organisation. This process entails answering all questions about risk culture, changes thereto, and the applicability of the risk culture for the future (Hillson & Simon, 2020). The constructs of the IRM framework (2012) are shown in Figure 3.

Figure 2.3: IRM Risk Culture Framework

Source: IRM (2012:54)

The constructs are the following:

- *Personal predisposition to risk*: People perceive risk differently based on their experiences. Thus, the framework proposes risk-based personality tests to understand individuals better.

- *Personal ethics*: The values held by an individual are regarded as part of the risk culture in that these influence the manner and quality of individuals' decisions.

- *Behaviours*: An individual's behaviours and attitude to risk contributes significantly to the culture within an organisation.

The IRM (2012) advocates that risk culture change must be treated using approaches to change management, and actions are not limited to documentation. There is a need to clarify the responsibilities of everyone, especially the HR department that executes the change (Sheedy *et al*., 2017; Hopkin, 2018; Sheedy & Lubojanski, 2018; Hillson & Simon, 2020). The IRM's Risk Culture Model is depicted in Figure 2.4.

Groups	Dimensions	Definition
Tone at the Top	Risk Leadership Dealing with bad news	Clarity of direction How organization responds to bad news
Decisions	Informed risk decisions Reward	Well informed risk decisions Performance measurement linked to appropriate risk taking
Governance	Accountability Transparency	Clarity of accountability for managing risk Transparency and timeliness of information
Competency	Risk Resources Risk Skills	Status, resources and empowerment of risk function Embedding risk skills across the organization

Figure 2.4: IRM Risk Culture Model

Source: IRM (2012:77)

The IRM Risk Culture Model (2012) shows that the main constructs of risk culture are: risk leadership, rewards, accountability, and risk resources. Leadership is responsible for clarifying direction, risk decisions, accountability, transparency, and the resources that influence risk culture (IRM, 2012). The main constructs include communication (tone at the top), governance, competency, and leadership (decisions) as drivers of risk culture.

The next section discusses the IOR Risk Culture Model.

2.4.4   IOR Risk Culture Iceberg

The IOR (2019) developed a model that explains how risk culture identifies, assesses, controls, and reduces the severity and frequency of operational risk events. However, the IOR (2019) asserts that there is no single optimal risk culture or universal characteristics of a 'strong' or 'weak' risk culture. The model guides how to effectively manage risk culture as a major driver of an organisation's operational risk management (IOR, 2019).

The IOR model (2019) indicates that risk culture concerns risk-taking and control. All organisations must implement risk-taking activities to successfully attain their objectives, including accepting a degree of operational risk exposure. An organisation's risk culture influences whether employees perceive operational risk as beneficial, such as risk associated with pursuing a potential opportunity or a threat. It may also influence whether they perceive operational risk management activities as a benefit or a cost. However, assessing risk culture is complicated and prone to inaccuracies and biased interpretations. Referring to the risk culture iceberg shown in Figure 2.5, the harder a risk is to assess, increases the potential for false or, at best, partially accurate results.
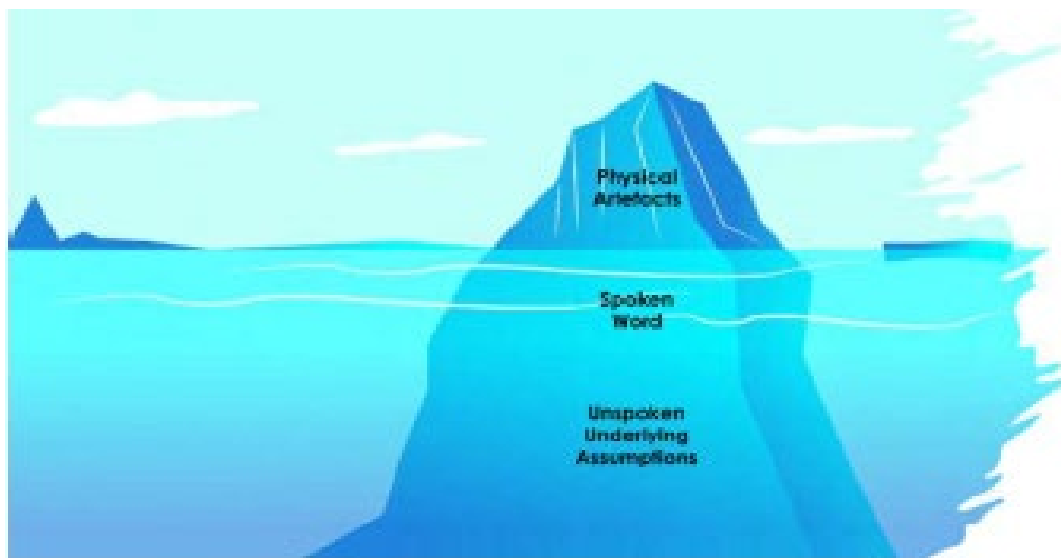
Figure 2.5: IOR Risk Culture Iceberg

Source: IOR (2019:4)

Figure 2.5 shows that the top level of risk culture relates to the structures such as reporting and governance, including documentation on operational risk management such as policies, procedures, terms of reference, minutes, and reports. This level is the most visible and easiest to analyse. However, it represents only the tip of the risk culture iceberg (IOR, 2019).

Figure 2.5 also shows that the middle level represents employees' perceptions organisations-wide of operational risk and its management. This level includes 'tone from the top' and 'tone in the middle', meaning what staff below top management are saying and whether they are receptive to top management's 'tone' (IOR, 2019).

The bottom level of the Risk Culture Iceberg (IOR, 2019) relates to assumptions and perceptions that are taken for granted, so much so that they are rarely verbalised. For example, people may have deep-seated and mutually reinforced views on specific operational risks or risk-management activities. For example, people may refuse to accept the importance of certain risks, such as cyberattacks or pandemic risks, or may innately assume that operational risk management is a bureaucratic exercise with limited business benefits (IOR, 2019).

While organisations may wish to implement a consistent, enterprise-wide risk culture, they must recognise that sub-cultures often exist. Sub-cultures emerge because people are culturally most influenced by those in near proximity. Sub-cultures exist even in smaller organisations, for example, within a specific department or branch. Sub-cultures are not necessarily a problem, especially where people have different roles, accountabilities, and objectives. However, they can become dangerous when a specific group develops values, beliefs, or attitudes that are contrary to those of the wider organisation and the needs of its stakeholders (IOR, 2019).

The assessment of risk culture, therefore, includes sub-cultures. The IOR (2019) encourages measuring risk culture using questionnaires, interviews, focus groups, and direct observations. The IOR model recommends a questionnaire to measure risk culture and provides a prototype for use. However, the IOR (2019) highlights the need for a questionnaire that measures specific aspects of risk culture since risk culture is a large and difficult concept to measure. The advantage of using a questionnaire to assess risk culture is the ability to see how risk culture evolves and to analyse the effectiveness of control measures (IOR, 2019).

2.4.5   Summary of risk culture models and theoretical framework

The main risk culture frameworks and models used in most banking institutions were discussed above. The main risk culture constructs of all four frameworks are communication, compliance, regulations, governance, transparency, and competence. The McKinsey (2012) framework identifies how risk is handled as a determining factor of risk culture, focusing on transparency, acknowledgement, responsiveness, and respect for risk. The PwC (2012) framework puts more emphasis on regulations as the main guiding factor in the risk culture of banks, which includes controlling the leadership and strategy attributes, infrastructure, accountability and reinforcement, risk management, people, and communication. The IRM (2012) framework focuses on individual factors in the form of attitudes, knowledge, and understanding, guided by leadership, competence, communication, and governance. The IOR (2019) model highlights the importance of reporting, governance, and communication, as well as the critical role played by sub-cultures in identifying, assessing, and measuring risk culture. The IOR (2019) further provides a questionnaire that is adapted and modified to measure the below proposed six main constructs identified in this literature review.

With the above view in mind, this study proposes a conceptual framework of the determinants of risk culture, discussed below.

2.5   PROPOSED CONCEPTUAL FRAMEWORK

The development of the conceptual framework shown in Figure 2.6 was founded on a literature review of the models of risk culture of the IOR (2019), the IRM (2012), PwC (2012), and McKinsey (2012). The proposed framework is based mainly on the IOR (2019) risk model. It indicates the main risk culture constructs, consisting of hard and soft determinants that can affect financial institutions' risk management.

Incentives	Governance
Competence	**Determinants of risk culture**	Compliance
Control	Effective communication
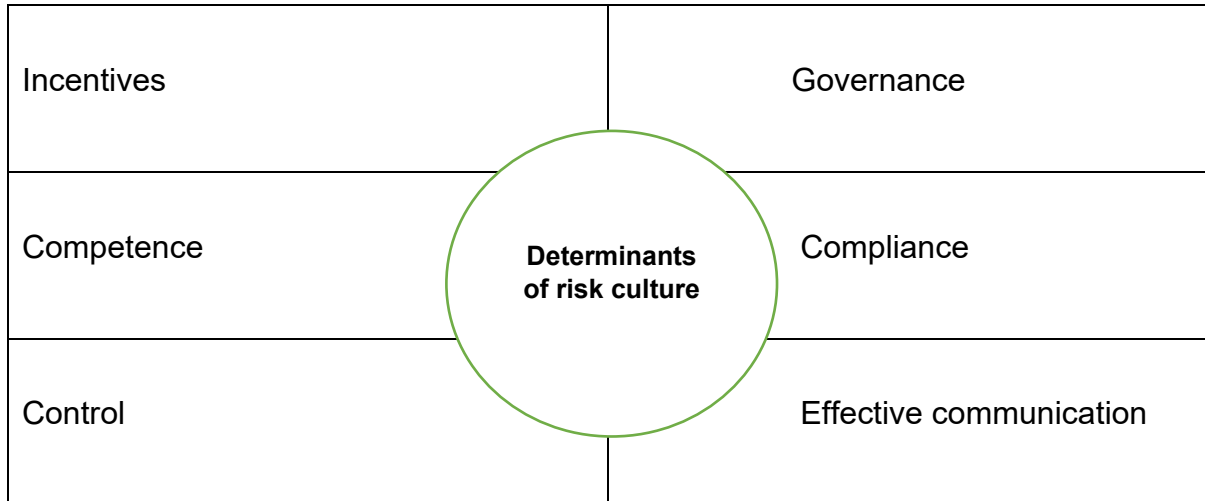
Figure 2.6: Conceptual framework

Source: Author's own compilation

Figure 2.6 shows that incentives, competence, control and mitigating measures, governance, awareness of regulatory and compliance risks, and effective communication are measures of risk culture.

2.6 PROPOSED RISK CULTURE FACTORS

The factors contained in the framework are discussed in the following sections.

2.6.1 Incentives

Incentives include rewards and behaviours that organisations institute as compensation for compliance with the organisation's risk culture (Abdullah, 2015). The incentives instituted by banks are in the form of both monetary and non-monetary rewards. Remuneration structures that are perceived as fair and reasonable encourage staff to pay attention to short and long-term risks (Banks, 2012). The performance management and compensation framework are designed and calibrated to support desired risk management outcomes (Bianchi, 2018).

The incentives offered by an organisation should be aligned with available or proposed rewards programmes (Cavaleos, 2019). The banking industry is establishing oversight committees and offices, as well as policies that ensure that their regulatory measures

are not leading to systemic risks. Such systems enable the organisation to align performance with the risk culture of the business entity and ensure the motivation of all employees (Abdullah, 2015).

Motivation relates to the analysis of why bank management and employees behave the way they do, how risk is viewed in performance management, risk appetite, inducements, and responsibilities (Cole *et al.*, 2017). It is crucial that banks align their institutional motivation arrangements with existing performance management, determine a shared risk language, and ensure that management and workers understand and practise the risk appetite statement (Hargarter & Van Vuuren, 2017). To ensure accountability, banks' executive management must communicate to business units, management, and employees the crucial role played by risk management and that both management and employees are held accountable for imprudent risk-taking (Abdullah, 2015).

Although incentives are considered a key motivator for workers to uphold the organization's risk culture and the sector, they also play a role in crises. (Cole *et al.*, 2017; Hargarter & Van Vuuren, 2017). Significant performance-contingent monetary incentives instituted in organisations have been identified as a catalyst for various forms of institutional misbehaviour (Stulz, 2016). The bonus structures used in the banking industry were found to be the cause of most corporate fraud (Hubbard, 2020). Therefore, incentives can either promote risk compliance or lead to corporate scandals (Bianchi, 2018).

Hence, it is imperative that leaders support employees in gaining an understanding and managing risk positively (IRM, 2012; FSB, 2014). This, in turn, fosters motivation as employees feel encouraged and supported to invest time in risk management, which will enhance risk-management awareness and proficiency within the organisation.

2.6.2   Governance

The concept of risk governance encompasses the institutions, rules, conventions, practices, and procedures that guide risk-taking (Kirikkaleli *et al.*, 2020). According to Van Asselt and Renn (2011:30), the concept of governance refers to the contextual translation of the substance and the core principles of governance concerning risk-

related decision-making. It is an interdisciplinary concept that includes, *inter alia*, public health, economics, psychology, sociology, and anthropology (Bianchi, 2018). Stein and Wiedemann (2016) state that it can be normative and positive, as it examines and develops risk-management plans that help mitigate human and economic costs due to disasters. In examining governance as it relates to risk culture, the organisation's methods, processes, and structures are important aspects.

Within an organisation, governance encompasses the methods, processes, and structures instituted to support risk management (Stulz, 2016). In other words, it focuses on how the bank's operating environment is designed to promote growth and sustainability of the desired culture and uphold what is considered the values of the bank (Vasvari, 2015). Thus, governance includes the strategies and objectives of the bank, the values and ethics guiding the bank's and its employees' practices, decision-making, and the bank's policies, and actions and methods that holistically support the bank's risk-management systems (Bianchi, 2018).

Building a sound risk culture takes more than devising a risk management framework; it necessitates governance structures, processes, and systems that encourage and support proper attitudes and behaviours and detect and address poor behaviours (FSB, 2014). Consequently, risk governance is closely associated with accountability (Banks, 2012; IRM, 2012; FSB, 2014) and should include a risk-ownership policy that ensures employee accountability and awareness of penalties related to poor risk management behaviour (FSB, 2014). This entails that risk accountability be embedded in employees' targets and job descriptions. In addition, the structures involved in risk governance must be transparent and adhere to timely communication of risk awareness within the organisation (IRM, 2012). Bianchi (2018) observed that efficient risk culture is prevalent in organisations that promote risk transparency and establish effective communication between the organisation's leaders and workers. The implementation of risk management practices goes a long way in fostering effective management of factors that may hinder organisational progress and achievements, thus mitigating uncertainty about the future (Stein & Wiedemann, 2016). The IRM (2012) states that organisations should acquire and employ high-quality risk information. The analysis of risk information should be formally challenged and validated to ensure quality outcomes (IRM, 2012). Consequently, the crucial role of accountability in risk management cannot be over-emphasised, and employees

should be held responsible for their actions (Banks, 2012; IRM, 2012; FSB, 2014). This means that banks should ensure awareness of the consequences and costs of failing to uphold the organisation's risk policy (FSB, 2014).

2.6.3 Risk competence

The term 'competence' is defined at the individual and the organisational level (Nduku, 2020). At the former, it is viewed as a set of skills, knowledge, and experience, which is developed and maintained through training and personal development (Cole *et al*., 2017). At the organisation level, it refers to the ability of an organisation to identify and maintain the necessary skills and capabilities of individuals and manage those individuals in such a way as to accomplish the objectives of the organisation (Sheedy & Lubojanski, 2018). Cole *et al*. (2017) posit that risk competence covers three aspects, namely, recruitment and induction, learning, and skills and knowledge about risk. Several scholars (Stulz, 2016; Sheedy & Lbojanski, 2018; Nduku, 2020) contend that, in determining risk culture maturity, banks need to evaluate the capacity of the board of directors, management, and staff to identify and assess risks and develop mitigating actions. According to Cole *et al*. (2017), there must be regular training, learning, skills transfer, and knowledge propagation to enhance risk management skills, particularly concerning best practices, regulations, policies, processes, and principles.

Organisations with high levels of competence are better performers in the medium- and long-term (Nduku, 2020). The same applies to organisations competent in both risk- and safety management. Such organisations' employees endeavour to understand and manage risks and position themselves better for unplanned events (Sheedy & Lubojanski, 2018). Risk plans are not the same for all organisations; thus, they require constant monitoring and evaluation to keep them current (Nduku, 2020). Competence is, therefore, the 'soft' side of risk culture and plays a crucial role in the establishment of an effective risk culture. Competence involves risk resources and skills, particularly of the personnel of the risk function (Nduku, 2020). The individuals responsible for risk management must be highly trained and have the necessary knowledge and abilities (Sheedy *et al*., 2017). Competence requires the availability of resources, and organisations should be able to provide the authority and status

associated with competence to promote relationships, credibility, and networks (IRM, 2012).

2.6.4 Compliance

Banks have to comply with extensive government legislation and industry regulations. Compliance risk refers to the effect of a change in laws and regulations that may cause losses to the bank, change the competitive landscape, make the bank's systems unlawful, or reduce the attractiveness of investments (Yuzvovich, Knyazeva & Mokeeva, 2016). Regulatory risk refers to possible changes in laws and regulations, while compliance risk is the potential of the bank breaching laws or regulations (Olamide, Uwalonwa & Ranti, 2015). Compliance risks may occur due to lacking control systems, poor training, inadequate due diligence, and human error (Vasvari, 2015). Compliance risks expose the bank to legal penalties, voided contracts, financial penalties, material loss, and damaged standing (Yuzvovich *et al*., 2016).

According to Mok and Aha (2017) and Hubbard (2020), the SARB and industry instituted anti-money laundering and counter-terrorism financing policies to comply with and prevent sanctions which can lead to reputational harm to banks. Despite the implementation, HSBC Holdings failed to comply with the anti-laundering policies, resulting in being fined US$1.92 billion (Stein & Wiedemann, 2016). Banks require regulatory change management, including plans and practices, as a prominent practice in their risk-management programme. Regulatory changes have trebled since 2011 (Hopkin, 2018; Hubbard, 2020), and adherence can be costly and arduous. Therefore, banks need to have apposite processes in place to remain aware of changes to legislation and regulations that affect the accomplishment of the bank's objectives (Kirikkaleli *et al*., 2020). Moreover, banks must be informed about any potential penalties or fines if the regulations are upheld. When regulatory changes are made, banks must assess how to include these changes in the policies, processes, and training. This requires tracking compliance as the changes are implemented (Sheedy *et al*., 2017). Regulatory requirements shape the prevailing culture in a bank, and a bank's regulatory practices shape its risk culture, thus determining the success of risk-management policies. All these issues contribute to the culture prevailing in a bank and reflect employees' consideration of compliance.

2.6.5 Control

There are several risk-control and mitigating measures. Risk mitigation is defined as a plan to prepare for and lessen the effects of threats that businesses face (Nduku, 2020). Risk control means reducing risk, whereas risk mitigation is aimed at lessening threats and the negative consequences of catastrophes on business continuity (Mok & Saha, 2017). The threats that pose risks to businesses include cyberattacks, changes in climatic conditions, and related causes of physical or virtual damage (Stulz, 2016).

Risks in the financial industry include liquidity risk, reputational risk, credit risk, operational risk and marketing risk (Vasvári, 2015), and banks must prioritise the management of risk to stay ahead of operational risks. Risk management and -control in banks thus go beyond compliance. Therefore, banks must remain flexible enough to make changes when faced with risky situations (Kirikkaleli *et al*., 2020).

Employees at Wells Fargo Bank opened about two million bank accounts without sufficient r customer permission, even though they had instituted controls to prevent such manipulation (Stulz, 2016). Rogue trade dealings show that bank employees sidestep controls to support illegal transactions that contravene parameters designed to control market risk (Sheedy, 2016; Stein & Wiedemann, 2016; Stulz, 2016). Credit limits are thwarted in banks by credit forms containing false information that cause credit risks that exceed the bank's risk appetite (McConnell, 2013).

2.6.6 Effective communication

Risk communication aims to distribute information and provide an understanding of risk-management decisions (Hopkin, 2018). The different stakeholders, especially management, must make informed conclusions about decision-making processes and how these impact their interests and values (Hubbard, 2020). Risk communication is used to, *inter alia*, clarify the probability of the risk impact, specify the variance between a hazard and a risk, deal with doubts and fears, address the long-term effects of risk and risk management, ensure that everyone understands risk-based terminology and concepts, and improve transparency and credibility (Barton & MacArthur, 2015).

Moreover, effective banking communication supports the relationships between various stakeholders and enhances the efficacy of risk management, training, internal control systems, data security management, and knowledge management (Schmitt, 2017). Banks communicate with different stakeholders using different channels, including social media platforms. It is vital to have a communication framework that guides how information is generated, stored, and shared (Butaru, Chen & Clark, 2016).

Communication of risk information or any other information is done formally or informally. Formal communication involves the flow of official information via predefined channels and routes (Barton & MacArthur, 2015). There is a deliberate effort to monitor and control the flow of information through hierarchical structures and chains of command. These structures can take the form of top-down communication, lateral communication, or bottom-up communication. The main advantages of formal communication include its reliability and ability to protect privileged information. Its main disadvantage is that it is usually slow (Cole *et al*., 2015, 2017).

Informal communication is multidimensional and freely moves within an organisation without defined channels and routes (Butaru *et al*., 2016). It is recognised as much more relational compared to formal communication. Relationships are important for the success of any organisation (Schmitt, 2017). Relationships refer to the connections and collaborations at different hierarchical strata within the bank (Cole *et al*., 2017). The interactions within the bank are vital to ethical dealings that strengthen these relationships, management and leadership's conduct and adequate understanding of roles and responsibilities, as well as the adequate flow of information that can ensure the development and sustainability of relationships (Hopkin, 2018). According to Butaru *et al*. (2016), risk-taking as part of corporate governance requires that relevant risk-related information be made available to the marketplace. In the United Kingdom, there is insufficient information disclosure of risk information. Pillar 3 of the Basel Committee on Banking Supervision's Basel II offers a comprehensive framework for information disclosure (Butaru *et al*., 2016).

The communication tone from the top management is crucial in shaping the organisation's risk culture. Communication includes management response to bad news (IRM, 2012) and risk leadership (IRM, 2012; FSB, 2014). These aspects are important because top management sets the tone for adopting fundamental values

and expectations for the organisation's risk culture. Top management is responsible for establishing the proper behaviours that promote an effective risk culture, as they lead by example (FSB, 2014). Communication is inclusive of the behaviour of the organisation's top management, which is apparent in actions, decisions, and outside messages (Barton & MacArthur, 2015). Communication is critical in the transmission of the organisation's attitude towards risk. Both the FSB (2014) and the IRM (2012) suggest four indicators for evaluating the adequacy of risk culture in the banking environment, one of which is communication. Both organisations suggest that the tone of top management is a critical indicator of the culture in a bank and the degree of stakeholder involvement in risk-management activities. Moreover, open communication and transparency determine the extent to which there can be dialogue regarding risk-management issues and the incentives offered to employees and management to partake in and uphold risk-management principles.

In summarising this section's discussion of risk culture constructs, a conceptual framework for banks' risk-culture maturity was suggested. The framework comprises six constructs: risk competence, incentives, governance, communication, control and mitigating measures, and awareness of compliance risks.

The next section discusses previous studies on the measurement of risk culture.

2.7   EMPIRICAL STUDIES

Although qualitative literature is abundant (Sheedy *et al.*, 2017; Sheedy & Griffin, 2018; Wood & Wilson, 2018) on risk culture, few quantitative studies have been conducted on this topic, probably due to challenges and difficulties faced in quantifying culture (Banks, 2012; Glaroofi *et al.*, 2022). Wood and Lewis (2018) offered a qualitative summary of aspects that influence an effective risk culture, comprising improved governance, good relationships with regulators, advanced decision-making processes, increased accountability, efficient communication, and compliance with rules and policies. However, few researchers (Fritz-Morgenthal *et al.*, 2015; Carretta, Farina & Schwizer, 2017; Agarwal, Gupta, Kumar & Tamilselva, 2019; Fernández Muñiz, Montes Peón & Vázquez Ordás, 2020) have attempted to develop and validate risk-culture instruments (Glaroofi *et al.*, 2022).

According to Kunz and Heitz (2021), risk culture remains a qualitative regulation covered by standards that include communication, remuneration, and other internal controls. Merchant and Van Der Stede (2017) argue that risk culture in banks is embedded in management controls. Kunz and Heitz (2021) argue that the available literature on financial institutions lacks a comprehensive view due to the pluralistic and fragmented approaches to risk culture of different researchers (Sheedy, 2016; Gande & Kalpathy, 2017; Schnatterly, Clark, Howe & DeVaughn, 2017; Sheedy *et al.*, 2017). In terms of past quantitative studies, Sheedy *et al.* (2017) used a 16-item scale structured along four factors (valued, proactive, avoidance, and manager) to measure the perception of risk culture, also termed 'risk climate'. Thakor (2016) used the Bank Culture Competing Values Framework (Quinn & Rohrbaugh, 1983) to create a risk culture instrument differentiating risk culture into partnership culture, risk-minimisation culture, product-innovation culture, and individual culture. The Competing Values Framework was also used by Nguyen and Sila (2019) to develop a two-factor risk culture measurement that assessed risk cultures related to growth and control and collaboration related to safety. Muniz, Montes Peón, and Vázquez Ordás (2020) used an 18-item scale to assess bank risk culture along four building factors proposed by the FSB's (2014) framework: incentives, communication, accountability, and tone from the top. However, none of these studies provides a validated scale for risk-culture measurement.

A number of organisations have provided frameworks, profiling tools, and diagnostic tools for enhancing an organization's risk culture and pursuing the model risk culture, including the IRM (2012) and the IOR (2019). However, the problem with the tools is that they have not been statistically tested for reliability and validity in measuring risk culture comprehensively. According to Miller (2022), these instruments have managed to simplify the risk and culture concepts into visible properties that can be measured, assessed, and implemented. After a preliminary assessment, top management can decide whether changes must be made to the existing risk culture and identify the necessary steps to effect the changes (Osman & Lew, 2020).

The IRM (2012) designed a diagnostic tool, the Risk Culture Aspects Model, conceptualised based on Goffee and Jones's (1998) instrument. The Financial Stability Board (2014) developed a framework that assesses risk culture in banks, whilst Comcover (2016) provides guidelines for determining an organisation's exiting

and ideal risk culture. The IOR (2019) proposed a risk culture questionnaire to assist in identifying and assessing risk culture, which formed the foundation of the measurement instrument examined in this study. The model focuses on providing organisations with practical tools that can be utilised to drive change and understand risk cultures (IRM, 2012). Although the above models use different approaches to risk culture assessment, they have several common constructs in terms of 'hard' aspects (e.g., governance structures, risk management frameworks) and 'soft' aspects (e.g., organisational values, behavioural norms and expectations values (Miller, 2020). Both are equally important and should result in mutual reinforcement. Although the hard aspects, like governance structures, are necessary, they cannot function in isolation (Glafoori *et al.*, 2022). Hard aspects help to build an effective risk culture by improving and advancing organisational transparency (Miller, 2022). However, soft aspects, such as attitudes and behaviours, are crucial in developing appropriate risk culture (Osman & Lew, 2020).

Several scholars (Power, 2009; Mikes, 2011; Minto, 2016; Nguyen *et al.*, 2019) describe a healthy risk culture as one that maintains a healthy critical distance from risk management approaches that are calculative and characterised by trust, solidarity and collaboration. Therefore, the literature argues for the modification of risk culture, irrespective of specific business models, since it results in the mitigation of unethical behaviour and excessive risk-taking activities that endanger the business models of financial institutions. Consequently, several scholars have advocated embedding risk culture in organisations to mitigate dysfunctional developments (McConnell, 2013; Gontarek, 2016; Bott & Milkau, 2018; Wood & Lewis, 2018).

2.8   CHAPTER SUMMARY

The chapter constitutes a literature review on risk culture as a key contributor to sound risk management in banks. The literature review demonstrated the significance of risk culture and covered concept-related theory. The main measures of risk culture, risk-culture theories, and risk models were explored; after that, a conceptual framework consisting of the main constructs of a risk culture as incentives, governance, competency, control, and compliance, was proposed based on the literature. These constructs were used to guide the questionnaire construction and the empirical study.

Whilst several studies have attempted to analyse risk culture qualitatively, few studies have measured risk culture quantitatively, and no comprehensive, reliable, and valid risk management tool has been offered. Chapter 3 is a presentation of the research methodology used in the study. It outlines the approach taken in carrying out the study. The research was conducted using a quantitative methodology under the direction of Saunders *et al.'s* (2019) Research Onion model.

CHAPTER 3

METHODOLOGY

3.1   INTRODUCTION

This chapter presents the methodology followed in conducting the research. The study followed a quantitative approach, guided by the Research Onion model propounded by Saunders *et al*. (2019). The following section describes the research design to provide a distinction between study methodology and study design.

3.2   RESEARCH DESIGN

The research focus or topic determines the type of research design and associated methods appropriate for a study (Quinlan, 2019). The research design is the overall plan a researcher selects to integrate the various parts of the research into a logical and coherent study (Creswell & Creswell, 2017). Ghauri, Grønhaug, and Strange (2020) define a research design as the blueprint for gathering, measuring, and analysing data.

Researchers have a choice of designs, such as descriptive design (for instance, a survey, case study, or naturalistic observation), correlational design (for instance, an observational study or case-control study), experimental design (for instance, a controlled experiment, field experiment or quasi-experiment), and causal-comparative/quasi-experimental (Yin, 2017; Quinlan, 2019). The current study followed the descriptive research design. Creswell and Creswell (2017) postulated that a descriptive research design aims to accurately and systematically describe a phenomenon. It seeks to respond to questions like "to *What? Where?* and *How?* but not *Why?".* This characteristic differentiates the descriptive research design from the experimental design. Using the descriptive design, the researcher only observes and measures the constructs without attempting to control or manipulate them (Ivankova & Greer, 2015). This was considered an appropriate design for the current study, which focused on the constructs of risk culture in a specific bank. The following

sections discuss the application of the Research Onion of Saunders *et al*. (2019) in the present study.

3.3   THE RESEARCH ONION MODEL

The Research Onion of Saunders *et al*. (2019) indicates the progression in stages of a research study. The practicality of the research model lies in its flexibility, as it can be applied in various contexts. According to Saunders *et al*. (2019), the researcher 'peels the onion' layer after layer from the outermost to the innermost. Accordingly, each layer is explained according to its applicability to the present study, starting with the research philosophy.
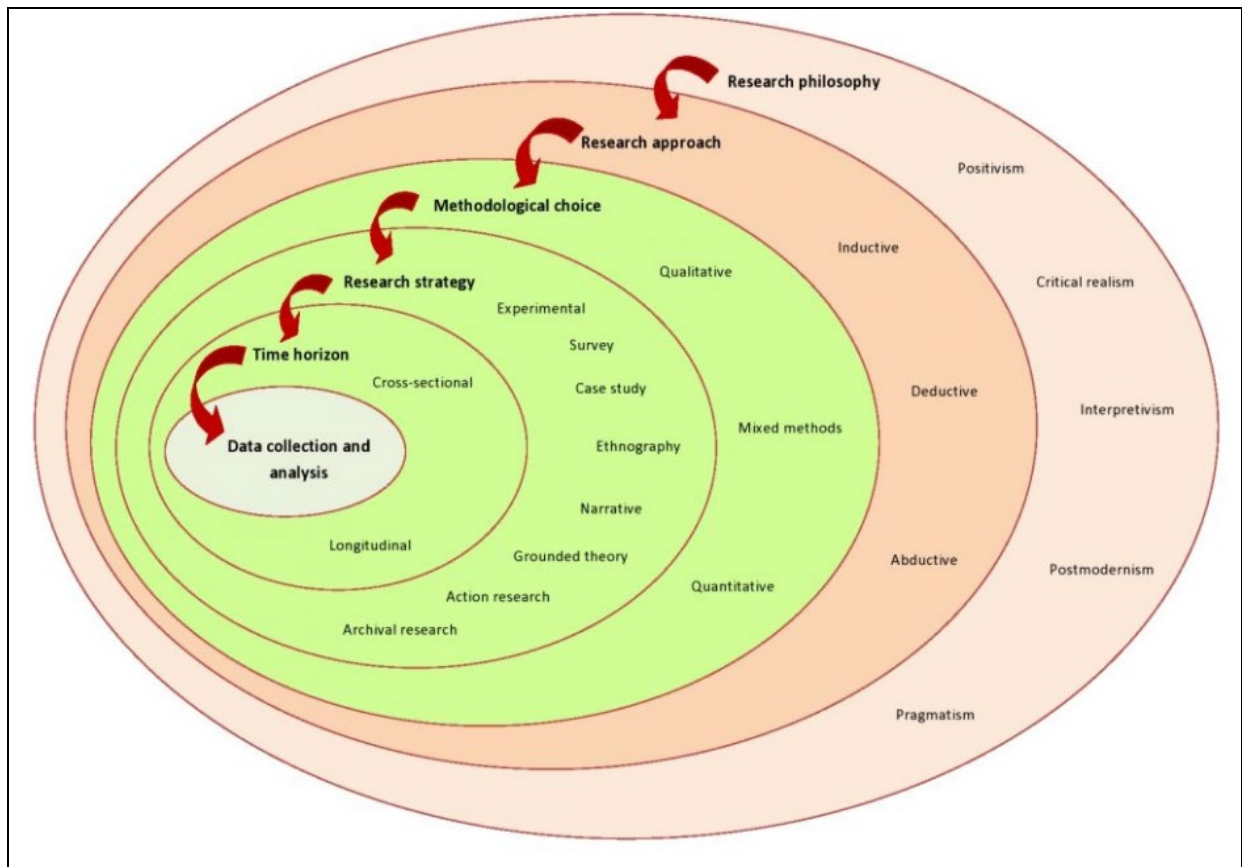
Figure 3.1: Research Onion Model

Source: Saunders *et al*. (2019:23)

3.3.1   Research philosophy

The outermost stratum represents research philosophies. The Research Onion developed by Saunders *et al*. (2019) indicates five philosophies, namely pragmatism, interpretivism, postmodernism and positivism. Each philosophy is briefly explained below.

Critical realism refers to a philosophical differentiation of the real world from the objective world. (Bryman, 2016). This philosophy holds that unobservable situations cause unobservable ones; thus, the social world can only be understood if the structures that create unobservable events are understood (Bell, Bryman & Harley, 2018).

Postmodernism is elitist and depends exclusively on the separation of high and low culture (Bryman, 2016). The philosophy holds that ideas may no longer be relevant or applicable as ideas move through cultures without attachment to prevailing contradictions. Philosophy contests the concepts of rationality, objectivity, and universal truth. Moreover, it stresses the variety of human experiences and the multiplicity of viewpoints (Saunders *et al*., 2019).

Pragmatism holds that researchers must use philosophical and/or methodological approaches to address the problem under investigation (Saunders *et al*., 2019), which may necessitate mixed-methods research (qualitative and quantitative). To some extent, pragmatism philosophy relates well to the constructionist paradigm, which holds that knowledge can be constructed practically (Saunders *et al*., 2019).

Interpretivism, also called 'anti-positivism' or 'natural inquiry', refers to an aspect of social enquiry that deals with how human beings perceive and understand their experience in different environments (Saunders *et al*., 2019). The philosophy relies on textual information to explain a phenomenon and thus lends itself to collecting and analysing qualitative data using, *inter alia*, questionnaires, interviews, and desktop research (Tracy, 2019; Hennink *et al*., 2020).

Contrary to interpretivism, the positivism paradigm holds that reality can be understood objectively and is best explained using numerical or statistical data (Gravetter & Forzano, 2015; Coolican, 2017). Thus, it is aligned with the use of a quantitative approach and statistical analysis to explain a phenomenon. (Jackson, 2015; Kelley-

Quon, 2018). The present study followed a positivist philosophy, in which quantitative data were gathered using a questionnaire containing only closed-ended items to validate a measurement instrument. Saunders *et al*. (2019) further note that positivism employs highly structured methods to facilitate repetition and outcomes that are law-like generalisations.

3.3.2   Research approach

The second stratum is the approach followed in the analysis, which could be deductive, inductive, or abductive. The deductive approach maintains reasoning that emanates from the specific to the general, while the inductive approach maintains reasoning that emanates from the general to the specific (Saunders *et al*., 2019). Following the abductive approach, the researcher develops or changes the view of the phenomenon before, during, and after the research has been completed (Saunders *et al*., 2019). According to Walliman (2015), the choice of a research approach is highly dependent on the research aims, study delimitations, and the personal opinion of the researcher.

The present researcher followed the deductive approach, i.e., reasoning from the general to the specific, associated with quantitative data analysis. Researchers using this approach generally start with theory and move to answer the research questions via the analysis of the data (Saunders *et al*., 2019).

3.3.3   Research strategy

The third stratum is the research strategy. Research strategies include case studies, experiments, archival research, grounded theory, surveys, action research, and ethnographies (Saunders *et al*., 2019). In the present study, a survey strategy was adopted. A survey strategy was considered appropriate because a large sample was required from one South African bank to effectively determine the risk culture of the financial institution. The advantages of the survey strategy are that it offers verifiable data from the individuals involved in the study (Quinlan, 2019) and can be conducted remotely (Yin, 2017). The present study administered the survey via an online Microsoft Forms link.

3.3.4   Methodical choice

The fourth stratum methodological choice can be quantitative, qualitative, or mixed methods (includes both qualitative and quantitative methods) (Saunders *et al*., 2019). The results from quantitative research can be generalised to a population, which cannot be done with quantitative findings (Bell *et al*., 2018). According to Creswell and Creswell (2018), quantitative research is underpinned by random sampling and structured data collection instruments such as questionnaires containing closed-ended items.

In quantitative research, numerical data are gathered and then statistically analysed to determine relationships between constructs. The results are often reported using graphs and tables (Yin, 2017). Quantitative data were used as the methodological basis for the current study to validate a risk-culture measurement tool appropriate for a financial institution.

3.3.5   Time horizon

There are two-time horizons, namely longitudinal and cross-sectional. According to Saunders *et al*. (2019), the cross-sectional data collection method requires data collection at one point in time, while the longitudinal data collection method requires intermittent data collection over a longer period for comparison purposes. The present study was cross-sectional.

3.4   TECHNIQUES AND PROCEDURES

The innermost or core of the research onion relates to techniques and procedures. These are divided into data collection and analysis in the following way:

3.4.1   Data collection method

Data can be primary or secondary in nature. Data that the researcher collects for the first time as first-hand information is termed 'primary data', whereas 'secondary data' is used to describe data that has been collected by other researchers and made publicly available in, for example, journal articles, periodicals, and annual reports

(Saunders *et al*., 2019). In this study, primary data were collected. Determining the appropriate method of data collection relies on certain considerations. These are discussed below.

3.4.1.1   *Population*

The population of a study consists of the units of interest in a study, from which a representative sample is drawn from which the study data are gathered (Saunders *et al*., 2019). The present study's population consisted of 30 000 employees of a bank in South Africa.

3.4.1.2   *Sampling*

A sample is a representative portion of the population under study (Saunders *et al*., 2019). The present researcher used convenience sampling, a form of non-probability sampling, whereby the possibility of selecting all population members as participants is limited. In convenience sampling, participants are chosen because the researcher can access them easily (Saunders *et al*., 2019). The current study sample was drawn from consultants, specialists, senior managers, middle managers, and junior roles who actively functioned in determining and nurturing the risk culture of the bank under study.

The researcher adopted Krejcie and Morgan's (1970) statistical formula to calculate the required sample size for the study. The study used all qualifying ($N = 30\,000$) employees to attain a 95% confidence level, and the sample for this study was calculated as follows:

$S = X^2 NP(1-P)/d^2 (N-1) + X^2 P(1-P)$;

S = required sample size;

X^2 = value of chi-square for 1 degree of freedom at the desired confidence level;

N = the population size;

P = the population proportion (assumed as .50); and

d = the degree of accuracy expressed as a proportion (.05).

As per the above statistical formula, the required sample for this study was 379 respondents. According to the IOR (2019), a sample that enables stratification of responses helps to identify existing sub-cultures. In the present study, the sample employees from different organisational levels of the organisation's risk management processes enabled the researcher to identify sub-cultures (IOR, 2019). As soon as the sampling size figure was reached for usage-able forms, no new completed forms were accepted by participants.

3.4.1.3   Development of the instrument

A survey questionnaire was utilised for the current study, offering the researcher wider coverage in collecting data. Surveys are also more economical and uniform than other data collection methods and are easier to administer (Lancaster, 2015). The disadvantages are that respondents may not be truthful, and they might not answer all the questions (Mellinger & Hanson, 2016).

Development of the instrument started with conducting an effective review of the literature, which revealed a lack of suitable items for measuring the constructs of risk culture; hence, in the present study, an instrument was developed to specifically and directly measure those constructs. The construction of the instrument was done by adapting the IOR (2019) Risk Culture measurement instrument's items, which corresponded to the six constructs of risk culture that emanated from the literature review, namely: incentive, governance, competency, compliance, control and communication.

The instrument had a cover letter that contained instructions for responding to the items. The instrument comprised two sections that respondents had to complete. Section A contained two items relating to the demographics of respondents, while Section B contained 46 items to determine the bank's risk culture. The following scales were used:

- **Incentive Scale (10 items)**

The items in this scale were assessed using a five-point Likert scale ranging from "Strongly agree" to "Strongly disagree". Examples of items are: "Mechanisms are in

place to recognise judicious risk-taking such as awards" and "Risk-taking has a positive effect on compensation and/or career advancement".

- **Governance Scale (eight items)**

The items in this scale were assessed using a five-point Likert scale ranging from "Strongly agree" to "Strongly disagree". Examples of items are: "Alert personnel responsible for risk management when risk issues arise", "Review risks as an aspect of the regular management reporting cycle", and "Escalate risk issues to the appropriate management level or committee".

- **Competence Scale (five items)**

The items in this scale were assessed using a five-point Likert scale ranging from "Strongly agree" to "Strongly disagree". Examples of items are: "Directed to avoid negative consequences", "Driven by prior incidents and losses", and "Directed to realise positive outcomes".

- **Compliance Scale (six items)**

The items in this scale were assessed using a five-point Likert scale ranging from "Strongly agree" to "Strongly disagree". Examples of items are: "Implementing procedural checks and controls", "Conforming to standards and certifications", and "Addressing regulatory demands".

- **Control Scale (five items)**

The items in this scale were assessed using a five-point Likert scale ranging from "Strongly agree" to "Strongly disagree". Examples of items are: "Allocate individual responsibility for failures", "Explore the causes of errors", and "Sanction personnel who made errors".

- **Communication Scale (12 items)**

The items of this scale were assessed using a five-point Likert scale ranging from (1) "Never", (2) "Monthly", (3) "Weekly," and (4) "Every 2nd day", to (5) "Daily". The items on communication responsibilities included questions to the researcher to group risk personnel through wording such as "Risk teams in my business unit/division", "The head of my business unit/division", and "My direct line manager" (see Appendix 1).

3.4.1.4   Pilot study

Piloting means testing the instrument to determine its suitability, correct any mistakes, and determine whether respondents understood the questions and could complete the instrument within the predetermined completion time (Kannan & Gowri, 2015:208). In piloting the instrument for the present study, a Microsoft Forms link was e-mailed to five business managers and five Contact Centre supervisors at the bank under study. The convenience sampling method was utilised to identify and select respondents for the pilot study. The input from the respondents was used to refine the instrument and data collection process.

3.4.1.5   Criteria for Inclusion

Criteria for inclusion means those key features that qualify members of the target population to participate in a study, for instance, age, income, and employment status (Saunders *et al*., 2019). In the present study, the respondents were the employees of the bank under study and worked in Gauteng province, where the research was conducted.

3.4.1.6   Administering the Questionnaire

After obtaining permission to conduct the study, a Microsoft Forms link was e-mailed to consultants, specialists, senior managers, middle managers, and junior roles who were chosen by using the convenience sampling method. An invitation to complete the survey was sent to the department managers requesting them to forward the Microsoft Forms link to their colleagues in their respective business clusters. A reminder e-mail to complete the survey was sent two weeks later. The email of the

participants was obtained from the human resources department. Data collection took place between January and February 2022.

3.4.2 Data analysis method

The data analyses were carried out using SPSS version 28. Demographic data were analysed to validate the nature of the sample used in this study. A multi-stage approach was used to validate the Risk Culture Measurement Instrument. Figure 3.2 summarises the validation process followed in this study, summarising the key techniques used. As noted in Section 3.4.1.3, the initial stage was a literature review to determine the main constructs to include to ensure a comprehensive risk culture measurement. The content validity of the items of each construct had previously been confirmed by risk experts in the industry and was part of well-known risk culture frameworks and models, such as those of the IRM (2012), PwC (2012), and the IOR (2019).

Research tool development
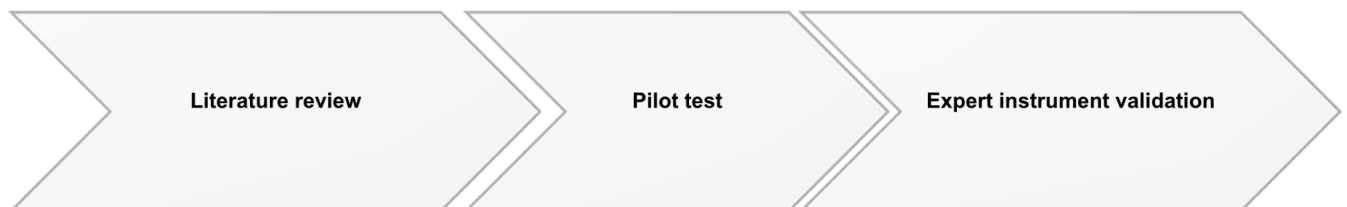
Research tool validation

Figure 3.2: Research tool development and validation process

Source: Author's own compilation

The calculation of missing values, case processing, and item analysis were all included in the statistics for instrument validation. In addition, confirmatory factor analysis (CFA) utilising structural equation modelling (SEM), discriminant validity, construct validity, and exploratory factor analysis (EFA) utilising principal construct analysis (PCA) are used (Hair *et al*., 2019). As part of the PCA, the missing value case processing verified the suitability of the sample, and the item analysis technique was used to identify and eliminate items that failed to add to the dependability of the overall scale (Hamid, 2017). The Kaiser–Meyer–Olkin (KMO) index value and Bartlett's test of sphericity value were computed as part of the PCA for each item to validate if confirmatory factor loading could be carried out (Hair *et al*., 2019). SEM and model fitness were assessed using a recommended threshold for the goodness-of-fit index (GFI), the Tucker-Lewis index (TLI), comparative fit index (CFI), composite reliability (CR), the normed fit index (NFI), chi-square degrees of freedom (CMIN/*df*), root mean square residual (RMSR), and root mean square error of approximation (RMSEA), as stipulated by Hamid (2017). SEM was used to establish relationships between the latent constructs of first-order risk culture constructs and modified models until a good fit was achieved.

3.5   RELIABILITY AND VALIDITY

Reliability refers to the consistency of a measure (Daniel & Cross, 2018). Saunders *et al*. (2019) state that reliable data produce consistent results with minimal errors and biases. Reliability was upheld in this research by analysing the Cronbach alphas for internal consistency of the constructs. Cronbach alphas indicate good internal consistency as equal to or greater than .70 (Hair *et al*., 2019). Since the data is collected at one point, i.e., cross-sectional instead of longitudinal, common method variance (CMV) was anticipated. However, CMV was eliminated by collecting data from multiple sources instead of relying on one similar source of participants (Craighead *et al*., 2011). The participants were from different levels of the organisation's hierarchy and departments.

Validity is the degree of accuracy in measurement, i.e. whether the items measure what they are expected to measure (Daniel & Cross, 2018). In the present study, the discriminant and convergent validity were checked to achieve construct validity.

Construct validity was achieved by checking if the items had an average variance extracted (AVE) > 0.5 and that factor loadings were above 0.6 (see Hair *et al*., 2019). Moreover, a multi-collinearity test was utilised to check if the independent constructs were correlated. Variance inflation factor (VIF) statistics were utilised to evaluate multicollinearity in the indicators (Akinwande, Agboola & Dikko, 2015). According to Hair *et al*. (2019), a multicollinearity threshold of a VIF of at least five is considered to be an irrelevant issue.

Discriminant validity was achieved by checking the construct cross-loading criterion. Fornell and Larcker (1981) assert that criterion, discriminant validity is established when the square root of AVE for a construct is greater than its correlation with all other constructs (Hamid, 2017). Hence, when dealing with two or more unique concepts, valid measures of each should not correlate too highly. According to Alarcon and Sanchez (2015), AVE measures the level of variance captured by a construct versus the level due to measurement error, and values above 0.7 are considered very good. Additionally, composite reliability was used as a measure of discriminant validity, and a threshold of more than 0.7 was considered good discriminant validity (Hair *et al*., 2019).

3.6   LIMITATIONS OF THE METHODOLOGY

The limitations of the methodology are the following:
- It relies on the mono-method; the present study used quantitative data. Collecting both quantitative and qualitative data would shed more light on the phenomenon under investigation.

3.7   ETHICAL CONSIDERATIONS

The study complies with the following ethical issues:

First, to ensure confidentiality, the questionnaire did not collect information on respondents' identities, ensuring anonymity. Second, given the nature of the study, respondents were not prone to harm or injury (see Creswell & Creswell, 2017). Third, to comply with ethical requirements set by UNISA (ethical clearance number: ERC Ref #2021/CEMS/FRMB/016; see Appendix 2) and the organisation where the data were

collected, the researcher obtained permission to involve a South African bank's personnel in the study. Fourth, the researcher explained that there were no rewards for participation and that participation was voluntary. In addition, respondents were free to revoke participation at any point during data collection without facing any negative consequences (Saunders *et al*., 2019).

Hence, data collected from participants relating to the participant were regarded as strictly confidential and were not used without prior approval from the respondent. It remained a priority that no respondents are harmed, and anonymity is maintained, as recommended by Bell *et al*. (2016).

3.8   CHAPTER SUMMARY

The chapter discussed how the data were gathered and analysed, as guided by the Research Onion model of Saunders *et al*. (2019). Quantitative data were gathered from personnel at a South African bank using an online Microsoft Forms link. The chapter further explained how data were analysed using SPSS version 28. The final sections of this chapter considered the limitations of the methodology, reliability and validity. Chapter 4 is a presentation of the outcomes of the study.

CHAPTER 4

RESULTS AND DISCUSSION

4.1   INTRODUCTION

This chapter reports the statistical results with regard to the empirical research aim, which was to validate a risk culture measurement using a South African bank. The chapter starts with the demographic data and then presents the results of item analysis, dimensionality, structural equation modelling (SEM) and confirmatory factor analysis (CFA), as well as an analysis of the missing values.

4.2   DEMOGRAPHIC RESULTS

Table 4.1 is a demographical presentation of the characteristics of this study's respondents.

Table 4.1: Demographic data

	n = 379	Percentage (%)
POSITION		
Junior	39	10.29%
Consultant/Specialist	54	14.25%
Manager	250	65.96%
Executive	36	9.50%
BANKING EXPERIENCE		
0 – 1 years	19	5.01%
2 – 3 years	37	9.76%
4 – 5 years	58	15.30%
6+ years	265	69.93%

Source: Author's own compilation

The majority of respondents were at a managerial level (66%) and had 6+ years of banking experience (70%). The other respondents were consultants (14.25%), junior personnel (10.29%) and executives (9.5%). The other respondents had at least 4-5

years of banking experience (15.30%), at least 2-3 years (9.76%) and 0-1 years (5.01%). This implies that the respondents were capable of accurate data with regard to the bank's risk culture dynamics.

4.3   MISSING VALUES CASE PROCESSING

Hair *et al*. (2019) advise that scholars check the dataset before using multivariate statistics like SEM. The present study examined the data, outliers and normality assumption, sample size and missing data. Table 4.2 reports the sample size and its suitability. The case pairwise option was utilised to exclude missing values, as Pallant (2016) recommended. Table 4.2 indicates the missing data for all six case processing constructs. Table 4.2 shows that all 379 responses were fit for use in the analysis, and no missing values were detected.

Table 4.2: Case processing summary

	Cases					
	Included		Excluded		Total	
Constructs	*n*	Percent	*n*	Percent	*n*	Percent
1. CMC	100	100.0%	0	0.0%	100	100.0%
2. CMI	100	100.0%	0	0.0%	100	100.0%
3. COM	100	100.0%	0	0.0%	100	100.0%
4. GOV	100	100.0%	0	0.0%	100	100.0%
5. INC	100	100.0%	0	0.0%	100	100.0%
6. RCO	100	100.0%	0	0.0%	100	100.0%

Note: CMC = *Communication*; CMI= *Control*; COM = *Competence*; GOV = *Governance*; INC = *Incentives*; RCO = *compliance*

Source: Author's own compilation

The case processing shows that six constructs were retained: *Communication*, *Control, Competence, Governance, Incentives*, and *compliance*. These results were similar to those of the proposed conceptual framework, which comprised the latter constructs.

4.4   ITEM ANALYSIS

The goal of completing an item analysis was to identify and eliminate items that did not add to the dependability of the overall scale (Pallant, 2016). In the present study, an item analysis using the SPSS version 28, an analysis to determine reliability, was performed on the constructs and items to assess the specific constructs under inquiry.

4.4.1   Item analysis of the Incentive Scale

The Incentives Scale was assessed for reliability as a uni-dimensional scale after measuring *Incentives* using a nine-item scale. The Cronbach alpha coefficient for the Incentives Scale was 0.774. According to Tabachnick and Fidell (2019), the lowest permissible Cronbach alpha coefficient value is 0.70. Thus, the Incentives Scale's reliability was satisfactory. The values of the corrected item-total correlation in Table 4.3 represent the strength of the connection between each item and the overall score. The adjusted item-total correlation values are not supposed to be smaller than 0.30, according to Pallant (2016), since this suggests that the item could be measuring something distinct from the complete scale. Table 4.3 shows that except for squared multiple correlations for Item INC2, the correlated item-total correlations for the Incentives Scale were higher than 0.30. The inter-item correlation matrix values were in the range of 0.266 to 0.545, suggesting that there was a small to strong association between the items (Hair *et al*., 2019). Items INC1, INC3, INC4, and INC5 were considered problematic; thus, to improve the reliability of the Incentives Scale, all the troublesome items were deleted. The results are shown in Table 4.3.

Table 2.3: Incentive Scale item analysis

Reliability Statistics				
Cronbach alpha		**Cronbach alpha based on standardised items**		**_n_ of Items**
0.773		0.774		5
Inter-item correlation matrix				
	INC2	INC6	INC7	INC8	INC9
INC2	1.000	0.418	0.386	0.262	0.266

	0.418	1.000	0.517	0.395	0.435
INC6	0.418	1.000	0.517	0.395	0.435
INC7	0.386	0.517	1.000	0.330	0.506
INC8	0.262	0.395	0.330	1.000	0.545
INC9	0.266	0.435	0.506	0.545	1.000

Item-total statistics

	Scale mean (if item deleted)	Scale variance (if item deleted)	Corrected item-total correlation	Squared multiple correlation	Cronbach alpha (if item deleted)
INC2	15.40	8.390	0.427	0.219	0.768
INC6	15.46	7.356	0.596	0.374	0.713
INC7	15.22	7.834	0.591	0.389	0.719
INC8	15.37	7.511	0.519	0.332	0.741
INC9	15.27	6.985	0.602	0.426	0.711

Source: Author's own compilation

The recorded outcomes showed a relatively strong correlation between the items of the Incentives Scale (INC2, INC6, INC7, INC8, and INC9). There are several forms of incentives. A study by Tam (2017) conducted in the Australian financial services industry found a strong correlation between incentives and risk compliance. The latter researcher notes that incentives such as loans, remuneration based on profits made by the organisation, and performance-based remuneration influence risk compliance in the financial services sector. Cole *et al*. (2017) found that a profit-focused environment is a barrier to generating a positive risk culture. This means that, in the absence of incentives, there is no influence on employees' behaviours to comply with the risk culture in the organisation (Cole *et al*., 2017; Hargarter & Van Vuuren, 2019). In view of the correlation between incentives and risk compliance, Stulz (2016) advises that incentives must be set right and calibrated so that both management and employees are encouraged to take the right risk actions at all times.

4.4.2 Item analysis of the Governance Scale

The Governance Scale consisted of eight items measuring governance. The Governance Scale was evaluated as uni-dimensional with a Cronbach alpha coefficient of 0.904. Hair *et al.* (2019) recommends that a Cronbach alpha coefficient should be more than 0.70; thus, the Governance Scale's reliability was adequate. The correlated item-total correlation values reported in Table 4.4 signify the extent to which individual items corresponded with the overall score. This is in accordance with Pallant (2016)'s submission that the correlated item-total correlation values must not be less than 0.30 since values below this threshold imply that the item measures something other than what the scale measures. The correlated squared multiple correlations and item-total correlation for the Governance Scale were greater than 0.30, as shown in Table 5. The inter-item correlation matrix values varied from 0.285 to 0.724, showing a small to large relationship between the items (Hair *et al.*, 2019). No items were deemed objectionable; hence, the whole scale was retained. The results are shown in Table 4.4.

Table 4.4: Governance Scale item analysis

Reliability Statistics							
Cronbach alpha		Cronbach alpha based on standardised items			*n* of items		
0.900		0.904			8		
Inter-item correlation matrix							
	GOV1	GOV2	GOV3	GOV4	GOV5	GOV6	GOV7	GOV8
GOV1	1.000	0.680	0.591	0.602	0.568	0.627	0.514	0.331
GOV2	0.680	1.000	0.633	0.662	0.613	0.657	0.480	0.443
GOV3	0.591	0.633	1.000	0.624	0.569	0.563	0.500	0.285
GOV4	0.602	0.662	0.624	1.000	0.683	0.659	0.492	0.369
GOV5	0.568	0.613	0.569	0.683	1.000	0.724	0.613	0.347
GOV6	0.627	0.657	0.563	0.659	0.724	1.000	0.616	0.369
GOV7	0.514	0.480	0.500	0.492	0.613	0.616	1.000	0.291
GOV8	0.331	0.443	0.285	0.369	0.347	0.369	0.291	1.000

Item-total statistics					
	Scale mean (if item deleted)	Scale variance (if item deleted)	Corrected item-total correlation	Squared multiple correlation	Cronbach alpha (if item deleted)
GOV1	28.23	21.538	0.720	0.556	0.884
GOV2	28.22	21.692	0.776	0.636	0.880
GOV3	28.25	21.107	0.688	0.517	0.887
GOV4	28.12	21.354	0.758	0.608	0.881
GOV5	28.15	21.393	0.762	0.635	0.881
GOV6	28.05	21.591	0.783	0.650	0.879
GOV7	28.23	21.918	0.636	0.463	0.892
GOV8	28.38	23.279	0.426	0.216	0.912

Source: Author's own compilation

The above outcomes indicate that governance strongly influences risk compliance in the financial sector. In other words, the board of directors, management, and supervisors influence an organisation's risk. This result is aligned with the view of Van Asselt and Renn (2011). Several other recent studies (Wood & Lewis, 2018; Mulyono & Wahyuni, 2020) showed this result; however, the studies were conducted outside the context of the banking industry.

The 2021 White Paper for the National Treasury of South Africa states that the three pillars on which governance is largely dependent are: internal audits, audit committees, and risk management. At the same time, risk management depends on an organisation's culture of risk awareness, which underpins risk management (Mulyono & Wahyuni, 2020). Mulyono and Wahyuni (2020) conducted a qualitative study and observed that risk culture inspires good governance and leads to the development of an environment that is free of corruption. Ching, Mohd-Rahim, and Chuing (2020) developed a conceptual model that illustrated the connection between risk culture and enterprise risk management and noted that the absence of risk culture and risk management poses a threat to organisational sustainability. Thus, embracing reviews from risk committees as well as other governance structures promotes a

positive risk culture. (Wood & Lewis 2018). However, a study by Mbewu and Barac (2017) found that eight audit committees and internal audit units were considered useless by municipal managers and incapable of effective execution of their governance obligations, which led to the failure of financial governance and control in most municipalities. Therefore, a negative risk culture in the public sector negatively affects the general performance of most municipalities. The results of the present study confirm the finding of other studies (Wood & Lewis, 2018; Schnatterly et al., 2019; Mulyono & Wahyuni, 2020) that reported a correlation between governance and risk culture.

4.4.3 Item analysis of the Competence Scale

Competence was assessed using a six-item instrument. The Competence Scale was evaluated as a uni-dimensional scale. Based on standard items, the Cronbach alpha coefficient for the scale was 0.753. The correlated item-total correlation indicated that all items had correlations higher than 0.30. The item analysis revealed that the deletion of any item failed to improve the scale's dependability. The researcher, therefore, opted to retain all five items. The scores ranged from 0.313 to 0.522, showing a small to strong association (Hair et al., 2019). No items were deemed objectionable; hence, the whole scale was retained. The outcomes of the Competence Scale are depicted in Table 4.5.

Table 4.5: Competence Scale item analysis

Reliability Statistics		
Cronbach alpha	Cronbach alpha based on standardised items	*n* of items
0.751	0.753	5
Inter-item correlation matrix					
	COM1	COM2	COM3	COM4	COM5
COM1	1.000	0.336	0.313	0.341	0.313
COM2	0.336	1.000	0.522	0.467	0.350
COM3	0.313	0.522	1.000	0.407	0.281
COM4	0.341	0.467	0.407	1.000	0.453

COM5	0.313	0.350	0.281	0.453	1.000

Item-total statistics

	Scale mean (if item deleted)	Scale variance (if item deleted)	Corrected item-total correlation	Squared multiple correlation	Cronbach alpha (if item deleted)
COM1	15.76	6.425	0.435	0.190	0.738
COM2	15.58	6.126	0.586	0.373	0.683
COM3	15.87	6.101	0.521	0.319	0.706
COM4	15.38	6.045	0.579	0.350	0.684
COM5	15.28	6.560	0.470	0.250	0.723

Source: Author's compilation

The results of this study confirm the literature in showing that the competence of employees significantly contributes to a positive and risk-aware culture in an organisation (Items COM1 to COM5). Wood and Lewis's (2018) qualitative study in the banking environment context revealed that employee risk awareness training and competence promote a positive and effective risk culture (see Item COM5). Researchers (Malloy, Trump & Linkov, 2016; Nduku, 2020) define the concept of competence as the ability of workers to perform their duties, supported by the skills and knowledge obtained in the course of their work duties. This is achieved by empowering workers' risk skills and a culture that supports their work (see Item COM3). The Auditor General of South Africa (AGSA) (2019/20) has consistently reported that, in certain municipalities, some municipal employees do not have the necessary credentials, skills, and competencies for performing their work effectively. This has resulted in, *inter alia*, excessive use and dependence on consultants in municipalities, even if municipal employees are empowered to do the job. Moreover, it was observed that some municipalities have strategic personnel, such as members of Municipal Public Accounts Committees, who are not adequately empowered, resulting in underperformance in various functional areas (AGSA, 2020).

4.4.4   Item Analysis of the Compliance Scale

The Compliance Scale contained five items. The scale was evaluated as a uni-dimensional scale. The Cronbach alpha coefficient for the scale was 0.855. According to Hair *et al*. (2019), a Cronbach alpha coefficient should be more than 0.70; therefore, the Compliance Scale's reliability was adequate. The correlated item-total correlation values in Table 6 indicate the extent to which individual items corresponded with the overall score. Pallant (2016) submitted that the correlated item-total correlation values could not be less than 0.30, as values below this threshold imply that the item measures something other than what the full-scale measures. The correlated item-total correlation and squared multiple correlations for the scale were greater than 0.30, as shown in Table 4.6. The inter-item correlation matrix values varied from 0.262 to 0.715, showing a small to large connection between the items (Hair *et al*., 2019). No items were deemed objectionable; hence, the whole scale was retained. The outcomes for the Compliance Scale are depicted in Table 4.6.

Table 4.6 Compliance Scale item analysis

Reliability Statistics						
Cronbach alpha		Cronbach alpha based on standardised items			*n* of Items	
0.852		0.855			6	
Inter-item correlation matrix						
	RCO1	RCO2	RCO3	RCO4	RCO5	RCO6
RCO1	1.000	0.666	0.549	0.448	0.578	0.338
RCO2	0.666	1.000	0.586	0.525	0.591	0.309
RCO3	0.549	0.586	1.000	0.715	0.617	0.262
RCO4	0.448	0.525	0.715	1.000	0.610	0.337
RCO5	0.578	0.591	0.617	0.610	1.000	0.321
RCO6	0.338	0.309	0.262	0.337	0.321	1.000
Inter-item correlation matrix						
	Scale means (if	Scale variance (if item deleted)	Corrected item-total correlation	Squared multiple correlation	Cronbach alpha (if item deleted)	

	the item deleted)				
RCO1	19.58	12.421	0.670	0.521	0.822
RCO2	19.62	11.968	0.696	0.542	0.816
RCO3	19.89	11.727	0.713	0.606	0.813
RCO4	19.89	12.000	0.691	0.574	0.817
RCO5	19.78	11.709	0.711	0.527	0.813
RCO6	20.22	13.348	0.382	0.167	0.877

Source: Author's compilation

The literature differentiates between Compliance risks. The former relates to a potential change in the laws and regulations, whereas the latter relates to those risks that potentially expose the organisation to negative consequences (Baselga-Pascual, Trujillo-Ponce & Vahamaa, 2018). The outcomes of the current study showed that three constructs related to regulatory risks, namely *Insufficient controls* (RCO1), *Lack of training* (RCO2), and *Human error* (RCO3). Three constructs were identified as relating to compliance risks, namely *Penalties* (RCO4), *voided contractual arrangements* (RCO5), and *Loss of business opportunities* (RCO6). The results show that the six constructs significantly influenced the risk culture in a bank. These results are consistent with other outcomes from various researchers, such as Vasvári (2015), Tam (2017), and Sheedy (2016).

4.4.5   Item analysis of the Control Scale

The Control Scale contained four items. The scale was evaluated as a uni-dimensional scale. The Cronbach alpha coefficient was 0.677. Hair *et al*. (2019) postulated that a Cronbach alpha coefficient should be more than 0.68; therefore, the scale's reliability was considered adequate. The item-total correlation values in Table 4.7 represent the extent to which an individual item corresponded with the overall score. Pallant (2016) submitted that the correlated item-total correlation values could not be less than 0.30, as values below this threshold imply that the item measures something other than what the full-scale measures. The squared multiple correlations for the Control Scale were below the acceptable level. The item-total correlation is greater than 0.30, as

depicted in Table 4.7. The inter-item correlation matrix values varied from 0.261 to 0.513, showing a small to large connection between the items (Hair *et al*., 2019). The outcomes are shown in Table 4.7.

Table 4.7: Control Scale item analysis

Reliability Statistics				
Cronbach alpha		Cronbach alpha based on standardised items		*n* of items
0.675		0.677		4
Inter-item correlation matrix				
		CMI1	CMI2	CMI3	CMI4
CMI1		1.000	0.261	0.472	0.290
CMI2		0.261	1.000	0.261	0.513
CMI3		0.472	0.261	1.000	0.265
CMI4		0.290	0.513	0.265	1.000

Item-total Statistics					
	Scale mean (if item deleted)	Scale variance (if item deleted)	Corrected item-total correlation	Squared multiple correlation	Cronbach alpha (if item deleted)
CMI1	10.32	4.886	0.461	0.257	0.607
CMI2	10.93	4.797	0.458	0.284	0.608
CMI3	10.92	4.560	0.438	0.249	0.624
CMI4	10.59	4.708	0.474	0.294	0.598

Source: Author's own compilation

The IRM (2012) states that control actions are thorough and specific for the reduction of the likelihood of a risk event. While there are several control and mitigating measures, according to the literature, this study identified four constructs (measured through Items CMI1 to CMI4), namely *Avoidance*, *Reduction*, *Transference*, and *Acceptance* (Carretta *et al*., 2017; Bianchi 2018). These constructs, in the current study, were found to significantly influence risk culture and compliance. Therefore, the results confirm the literature review's findings in this regard.

Banks must prioritise risk management to stay ahead of the risks they face in their operations. Risk management and control in banks go beyond compliance since they must be on the lookout for different types of risks stated above. This requires that banks remain abreast of risks and be flexible to make changes when faced with risky situations (Malloy *et al*., 2016; Kirikkaleli *et al*., 2020).

4.4.6 Item analysis of the Communication Scale

Communication was measured by means of a four-item scale. The scale was assessed as a uni-dimensional scale. The scale's Cronbach alpha coefficient was 0.760. Hair *et al*. (2019) suggest that a Cronbach alpha value must be greater than 0.70; therefore, the Communication Scale's dependability was considered satisfactory. The degree to which individual items correlated with the overall score is indicated in the item-total correlation values in Table 9. The associated item-total correlation values should not be less than 0.30, according to Pallant (2016), which would indicate that the item measures something other than what the complete scale measures. The Communication Scale's squared multiple correlations and associated item-total correlation fell above the threshold, as shown in Table 4.8. The association between the items are shown in the inter-item correlation matrix values, which ranged from 0.283 to 0. 565. For the CMC, all items were thought to have been considered. Table 4.8 displays the outcomes of the Communication Scale.

Table 4.8: Communication Scale item analysis

Reliability Statistics		
Cronbach alpha	Cronbach alpha based on standardised items	*n* of items
0.759	0.760	4

Inter-item correlation matrix				
	CMC1	CMC2	CMC5	CMC6
CMC1	1.000	0.467	0.552	0.302
CMC2	0.467	1.000	0.283	0.565
CMC5	0.552	0.283	1.000	0.479
CMC6	0.302	0.565	0.479	1.000

Item-total statistics					
	Scale mean (if item deleted)	Scale variance (if item deleted)	Corrected item-total correlation	Squared multiple correlation	Cronbach alpha (if item deleted)
CMC1	8.00	15.393	0.557	0.430	0.703
CMC2	7.77	16.054	0.550	0.441	0.707
CMC5	8.18	15.183	0.556	0.436	0.703
CMC6	7.78	15.420	0.565	0.449	0.698

Source: Author's own compilation

The outcomes confirm the finding of several studies that communication is an essential aspect of risk management (Schmitt, 2017; Sheedy *et al*., 2017; Nduku, 2020;). As confirmed in the results for Items CMC1, CMC2, CMC5, and CMC6, the most basic principles of risk communication that ensure risk compliance in the banking space include identifying the risk, determining the impact of the risk, implementing and communicating mitigating procedures, assessing the efficacy of the communication, and reporting the risk information. This makes communication central in determining the bank's risk culture and ensuring compliance. In line with the results, good corporate governance ensures that risks are identified and understood, handled tactfully, and communicated clearly where applicable (Stulz, 2016). There is a need for clear and structured communication channels to ensure effective reporting to all stakeholders within and outside the bank. Bank employees must be encouraged to recognise and communicate details on existing and emerging risks using a well-defined escalation and cascading process (Tam, 2017). Such communication channels should ensure that everyone in the bank is informed regarding the expectations from top management, cascaded to employees, and enable employees to communicate with management regarding the risk culture. Top management must be able to translate and communicate intricate risk strategies, methods, and terms in the form of clear and actionable information (Butaru *et al*., 2016).

4.5   DIMENSIONALITY ANALYSIS

4.5.1   Dimensionality output for the Incentives Scale

The Incentives Scale achieved a KMO index value of 0.765 and Bartlett's test of sphericity value of 486.355 ($df = 10$; $p < 0.000$). This indicated that factor analysis could be undertaken. The Incentives Scale was observed to be uni-dimensional. One factor with an eigenvalue greater than one was achieved. The first factor, incentives, achieved an eigenvalue of 2.639. The factor accounted for 52.78% of the discrepancy. The factor loadings were all above 0.50, as depicted in Table 4.9.

Table 4.9: Incentive Scale rotated Construct matrix

	Construct
	1
INC9	0.773
INC6	0.771
INC7	0.766
INC8	0.695
INC2	0.614
Eigenvalue	2.639
Percentage of variance	52.78%
Extraction method: PCA	

Source: Author's own compilation

4.5.2   Dimensionality output for the Governance Scale

The Governance Scale achieved a KMO index value of 0.904 and Bartlett's test of sphericity value of 1378.015 ($df = 15$; $p < 0.000$). This indicated that factor analysis could be undertaken. The scale was found to be uni-dimensional. One factor with an eigenvalue greater than one was achieved. The factor (Governance) achieved an eigenvalue of 4.154. The factor accounted for 69.23% of the discrepancy. The factor loadings were all above 0.50, as depicted in Table 4.10.

Table 4.10: Governance Scale rotated Construct matrix

	Construct
	1
GOV2	0.852
GOV6	0.849
GOV4	0.849
GOV5	0.834
GOV1	0.813
GOV3	0.793
Eigenvalue	4.154
Percentage of variance	69.23%
Extraction method: PCA	

Source: Author's own compilation

4.5.3   Dimensionality output for the Competence Scale

The Competence Scale attained a KMO index value of 0.785 and Bartlett's test of sphericity value of 403.852 (df = 10; p < 0.000). This indicates that shows that factor analysis can be undertaken. The competence scale was found to be uni-dimensional. One factor with an eigenvalue greater than one was achieved. The factor (Competence) obtained an eigenvalue of 2.526. The factor account for 50.51% of the discrepancy. The factor loadings were all above 0.50, as depicted in Table 4.11.

Table 4.11: Competence Scale rotated Construct matrix

	Construct
	1
COM2	0.770
COM4	0.765
COM3	0.718
COM5	0.664
COM1	0.625
Eigenvalue	2.526
Percentage of variance	50.51%
Extraction method: PCA	

Source: Author's own compilation

4.5.4 Dimensionality output for the Compliance Scale

The Compliance Scale achieved a KMO index value of 0.843 and Bartlett's test of sphericity value of 1022.480 (df = 15; p < 0.000). This indicated that factor analysis could be undertaken. The scale was determined to be uni-dimensional. One factor with an eigenvalue larger than one was attained. The factor (Compliance) had an eigenvalue of 3.547, which accounted for 59.12% of the variation. Except for Item RCO6, the factor loadings were all greater than 0.50, as reflected in Table 4.12.

Table 4.12: Compliance Scale rotated Construct matrix

	Construct
	1
RCO3	0.833
RCO5	0.824
RCO2	0.814
RCO4	0.803
RCO1	0.786
RCO6	0.499
Eigenvalue	3.547
Percentage of variance	59.12%
Extraction method: PCA	

Source: Author's own compilation

The factors that were below the threshold, such as RC06, were dropped and not included for further analysis.

4.5.5 Dimensionality output for the Control Scale

The Control Scale had a KMO index value of 0.645 and Bartlett's test of sphericity score of 259.614 (df = 6; p < 0.000), showing the feasibility of factor analysis. It was established that the scale was one-dimensional. One factor with an eigenvalue greater than one was found. The eigenvalue of the factor (Control) was 2.032. The factor was responsible for 50.79% of the discrepancy. The factor loadings were all greater than 0.50, as depicted in Table 4.13.

Table 4.13: Control Scale rotated Construct matrix

| | Construct |
	1
CMI4	0.733
CMI2	0.718
CMI1	0.706
CMI3	0.693
Eigenvalue	2.032
Percentage of the variance	50.79%
Extraction method: PCA	

Source: Author's own compilation

4.5.6   Dimensionality output for the Communication Scale

The Communication Scale had a KMO index value of 0.598 and Bartlett's test of sphericity value of 492.665 (*df* = 10; *p* < 0.000), indicating that factor analysis could be undertaken. The scale was determined to be uni-dimensional. One factor with an eigenvalue greater than one was achieved. The factor (Communication) had an eigenvalue of 2.479, accounting for 49.59% of the variation. Except for Item CMC3, the factor loadings were all over 0.50, as indicated in Table 4.14.

Table 4.14: Communication Scale rotated Construct matrix

| | Construct |
	1
CMC1	0.765
CMC2	0.749
CMC6	0.741
CMC5	0.740
CMC3	0.487
Eigenvalue	2.479
Percentage of the variance	49.59%
Extraction method: PCA	

Source: Author's own compilation

4.5.7 Summary of the dimensionality results for all scales

To evaluate the applicability of the data, explanatory factor analysis (EFA) using the principle construct analysis (PCA) was conducted. The KMO measure and Bartlett's test of sphericity were also utilised to verify the sample's adequacy. All KMO values for the six constructs were greater than .50, and their corresponding Bartlett's values were statistically significant at $p < .001$. The EFA results showed that a sample size of 379 was sufficient to perform EFA. After establishing the data's appropriateness and completing the EFA, confirmatory factor analysis (CFA) was done on the six constructs to find constructs prior to conducting SEM. The outcome of the CFA is reported in the following section.

4.6 MEASUREMENT MODEL FOR THE RISK CULTURE IN THE BANKING SECTOR

4.6.1 *Incentive* construct

The original estimate of the *Incentive* construct's six items revealed a GFI, CFI, and CR, which were acceptable, but the NFI, TLI, CMIN/*df*, RMSEA, and RMR were over the threshold (Hair *et al.*, 2019). The AVE was lower than what was considered acceptable. All the constructs, however, had factor loadings greater than .50. The alternative models suggested indices showed good agreement with the model (see Figure 4.1). As all the essential ratios were greater than 1.96, the paths represented in the final alternative model A1 were significant.

Model I: CMIN = 46.65; *df* = 5; CMIN/*df* = 9.33; *p* = .00; GFI = 0.95; NFI = 0.81; CFI = 0.91; TLI = 0.83; RMSEA = 0.15; RMR = 0.05; AVE = 0.42; CR = 0.78	Model A1: CMIN = 14.12; *df* = 4; CMIN/*df* = 3.53; *p* = 0.01; GFI = 0.99; NFI = 0.97; CFI = 0.98; TLI = 0.95; RMSEA = 0.08; RMR = 0.02; AVE = 0.40; CR = 0.76

Figure 4.1: *Incentive* **construct measurement model**

Source: Author's own compilation

4.6.2   *Governance* construct

The initial estimate of the *Governance* construct's five items revealed a good model fit. The GFI, NFI, CFI, TLI, CR, and RMR were acceptable, but the CMIN/*df* and RMSEA were over the threshold (Hair *et al.*, 2019). The AVE was higher than what was considered acceptable. All the items, however, had factor loadings greater than .50. The alternative models suggested indices showed good agreement with the model (see Figure 4.2). As all the essential ratios were greater than 1.96, they were significant and are represented in the final model, A2.

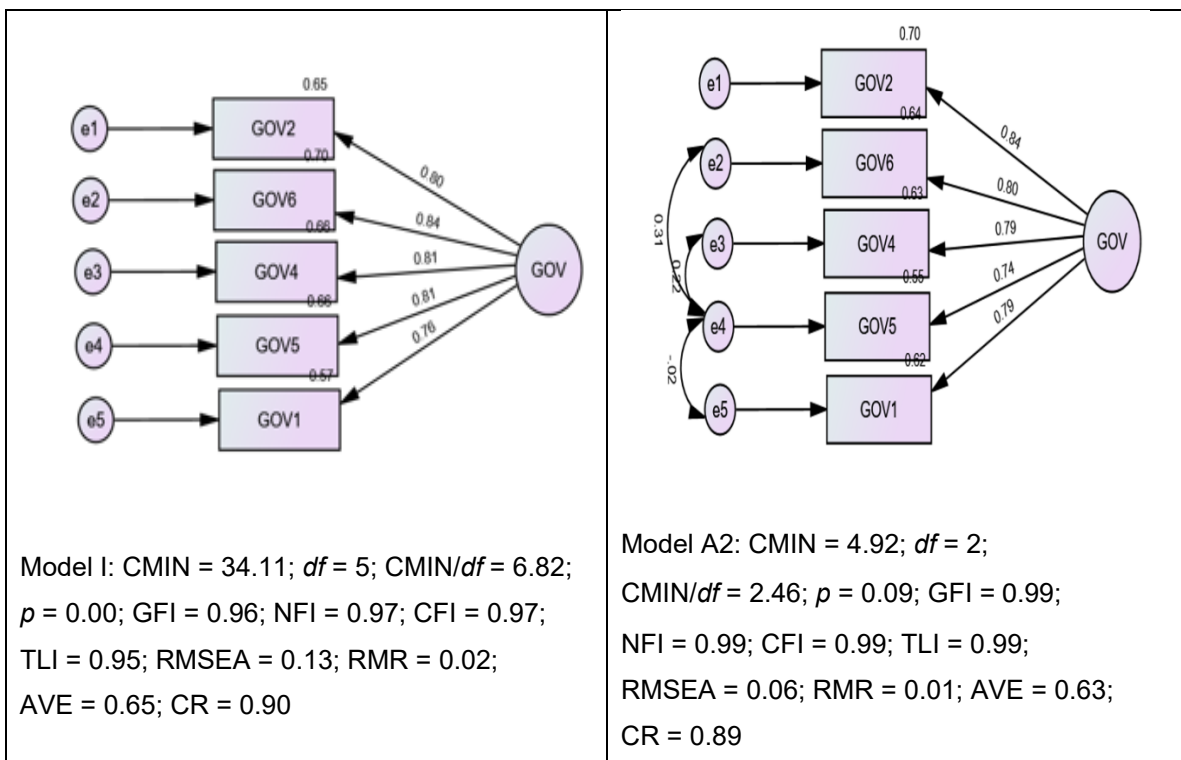| Model I: CMIN = 34.11; *df* = 5; CMIN/*df* = 6.82; *p* = 0.00; GFI = 0.96; NFI = 0.97; CFI = 0.97; TLI = 0.95; RMSEA = 0.13; RMR = 0.02; AVE = 0.65; CR = 0.90	Model A2: CMIN = 4.92; *df* = 2; CMIN/*df* = 2.46; *p* = 0.09; GFI = 0.99; NFI = 0.99; CFI = 0.99; TLI = 0.99; RMSEA = 0.06; RMR = 0.01; AVE = 0.63; CR = 0.89

Figure 4.2: *Governance* **construct measurement model**

Source: Author's own compilation

4.6.3   *Competence* construct

The initial estimate of the *Competence* construct's five items revealed a good model fit. The GFI, NFI, CFI, TLI, and CR were acceptable, but the CMIN/*df*, RMSEA, and RMR were below the threshold (Hair et al., 2019). The AVE was below what was considered acceptable. However, all the items presented factor loadings higher r than 0.50. The suggested indices of the alternative model, A3, showed good agreement with the model (see Figure 4.3). As all the essential ratios were over 1.96, the routes represented in the alternative model, A3, were significant.

Model I: CMIN = 19.82; *df* = 5; CMIN/*df* =3.96; *p* = 0.01; GFI = 0.98; NFI = 0.95; CFI = 0.96; TLI = 0.93; RMSEA = 0.08; RMR = 0.03; AVE = 0.39; CR = 0.76

Model A3: CMIN = 7.42; *df* = 4; CMIN/*df* = 1.85; *p* = 0.12; GFI = 0.97; NFI = 0.98; CFI = 0.99; TLI = 0.98; RMSEA = 0.05; RMR = 0.02; AVE = 0.37; CR = 0.74

Figure 4.3: *Communication* construct measurement model

Source: Author's own compilation

4.6.4   *Compliance* construct

The six-item model of the *Compliance* construct proposed a good fit in the preliminary estimate. The GFI, NFI, CFI, SRMR, AVE, and CR were acceptable, but the other indices — CMIN/*df*, RMSEA, and TLI — were not. However, all the constructs indicated factor loadings > .5. The indices of the alternative model A4 were found to fit the model well (see Figure 4.4). As all the essential ratios were over 1.96, the paths represented in the alternative model, A4, were significant.
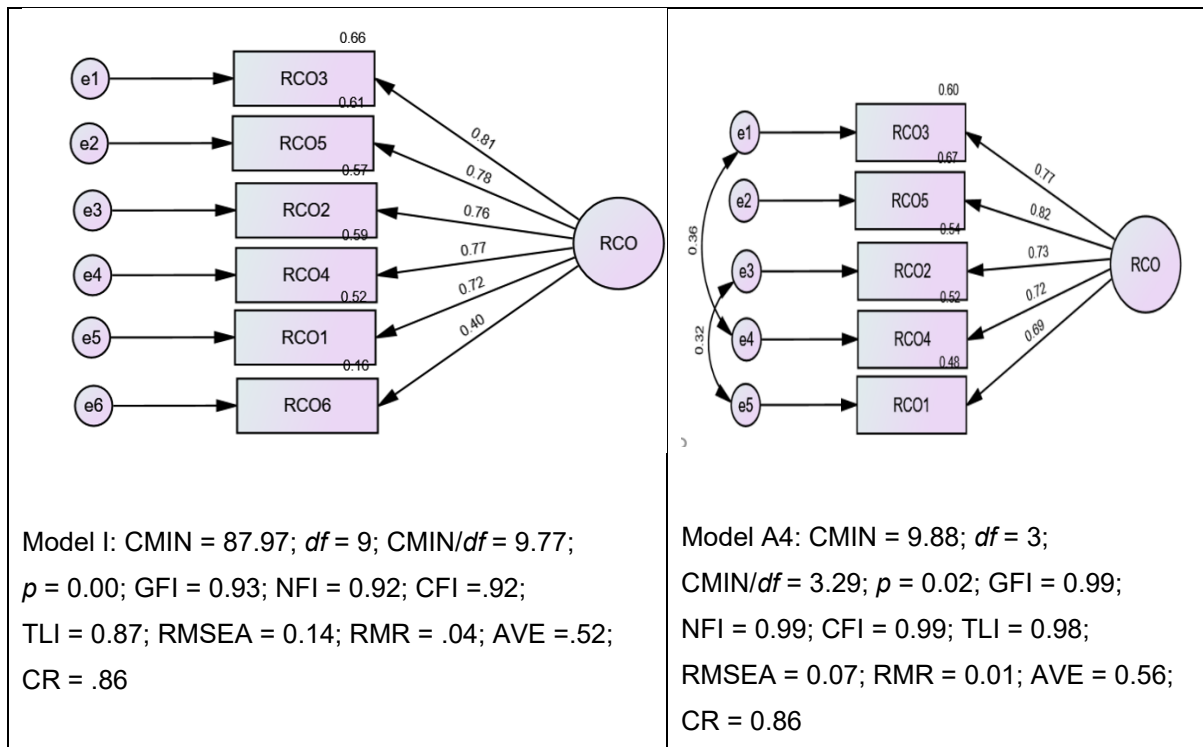
Figure 4.4: *Compliance* **construct measurement model**

Source: Author's own compilation

4.6.5 *Control* construct

The five-Construct-construct model of *Control* proposed a poor fit in the preliminary estimate. The CFI, NFI, TLI, CMIN/*df*, RMSEA, RMSR, and AVE were below the required level, while the GFI and CR were acceptable. All the constructs indicated factor loadings > .5. Most of the indices of the alternative model were found to not fit the model well, except for GFI and CR (see Figure 4.5). Since all the essential ratios were over 1.96, the paths represented in the alternative model, A5, were significant.
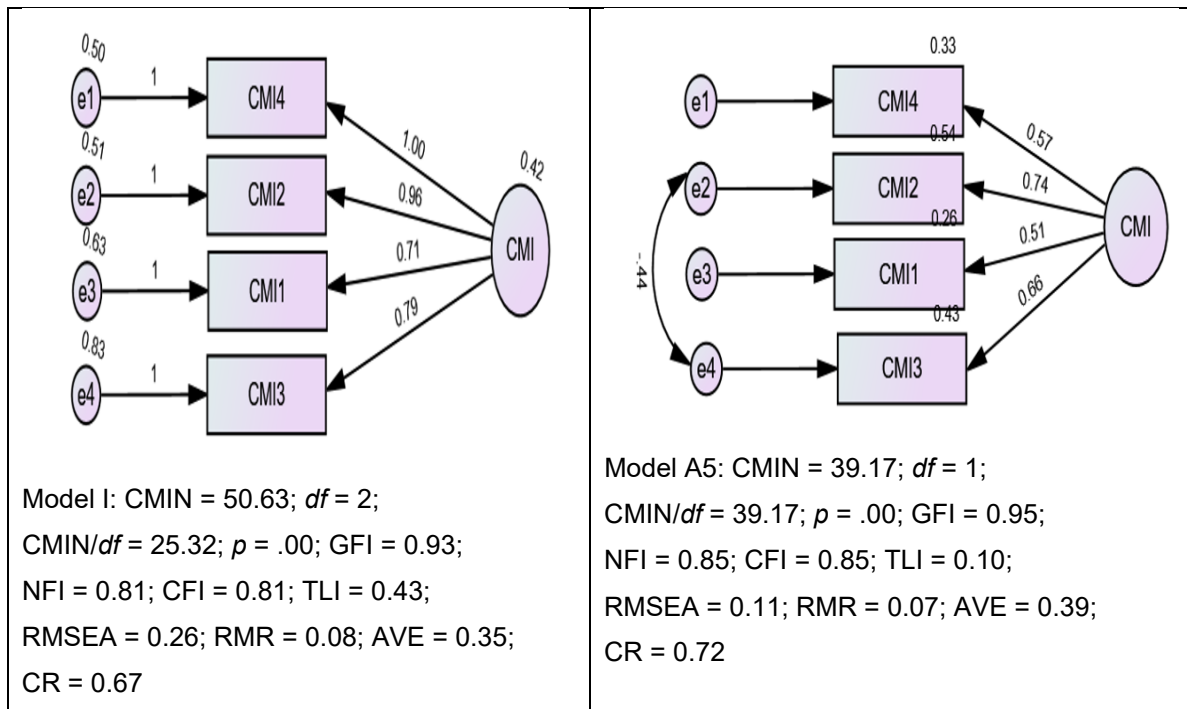
Figure 4.5: *Control* **construct measurement model**

Source: Author's own compilation

4.6.6 Communication construct

The five-Construct-construct model of *Communication* proposed a poor fit in the preliminary estimate. The CFI, NFI, LTI, CMIN/*df*, RMSEA, RMR, and AVE were below the expected level, while the GFI and CR were above the acceptable level. Some of the constructs indicated factor loadings < .5. The indices of the alternative model were found to fit the model well, except for AVE (see Figure 4.6). As all essential ratios were over 1.96, the paths represented in the alternative model, A6, were significant.

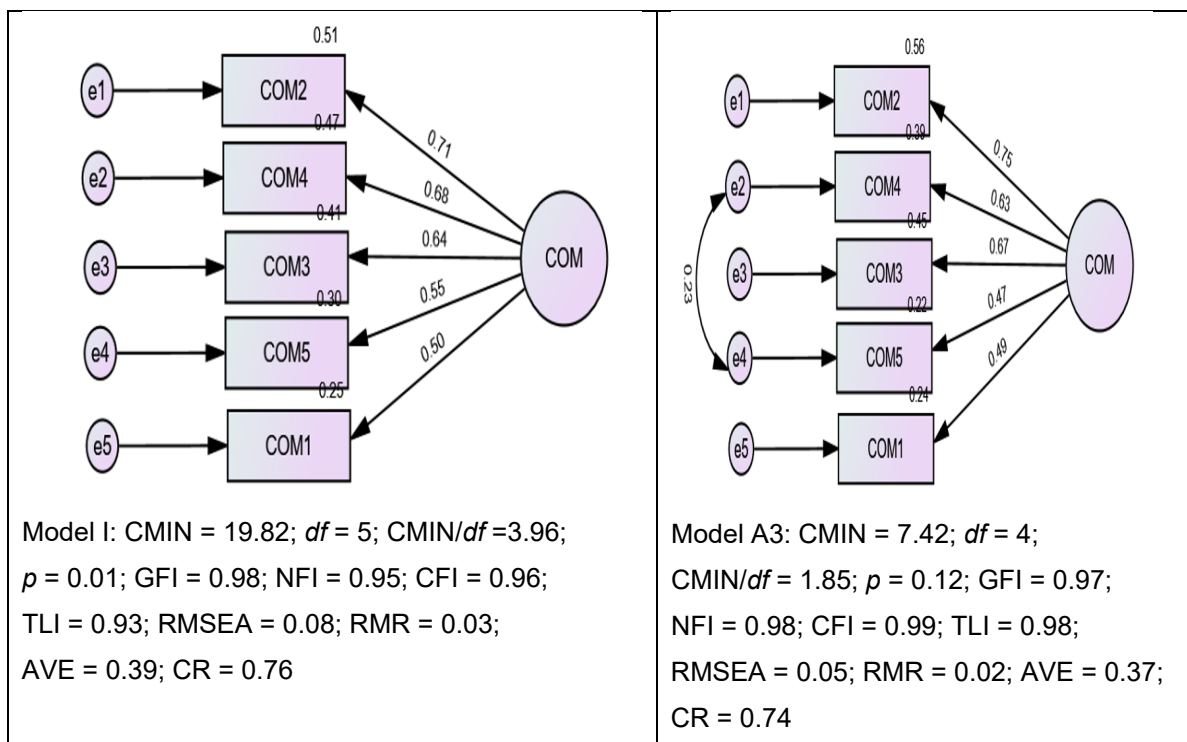Model I: CMIN = 119.17; *df* = 5; CMIN/*df* =23.83;

p = .00; GFI = 0.91; NFI = 0.76; CFI = 0.77;

TLI = 0.53; RMSEA = 0.25; RMR = 0.20;

AVE = 0.38; CR = 0.75

Model A6: CMIN = 4.37; *df* = 3;

CMIN/*df* = 1.46; *p* = 0.23; GFI = 0.99;

NFI = 0.99; CFI = 0.99; TLI = 0.99;

RMSEA = 0.04; RMR = 0.06; AVE = 0.34;

CR = 0.69
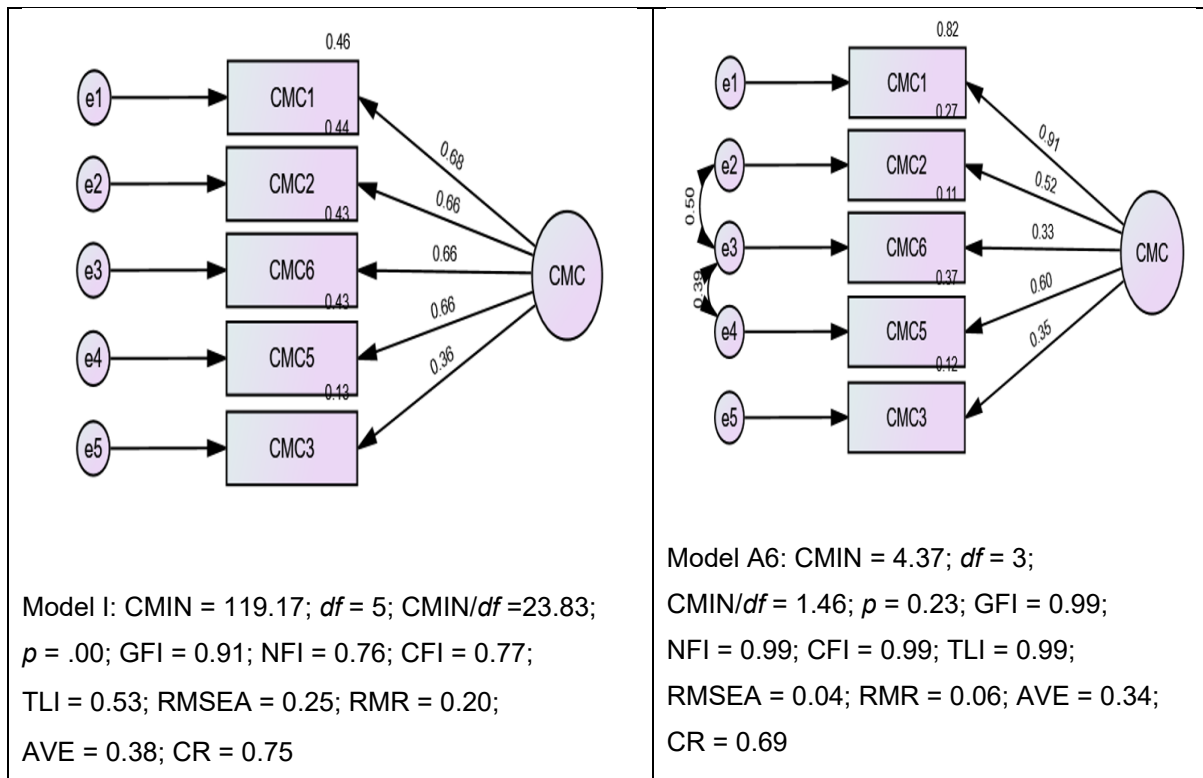
Figure 4.6: *Communication* construct measurement model

Source: Author's own compilation

4.7   Results of SEM

This section reports the extent to which the conceptual model developed based on constructs (*Competence*, *Compliance*, *Communication*, *Control, Governance*, and *Incentive*) fit the empirical model based on SEM.

4.7.1 SEM results before modification

The first-order model of the risk culture constructs proposed a poor fit in the preliminary estimate. The CFI, NFI, LTI, CMIN/df, RMSEA, RMR, and AVE were below the expected level.

The SEM was performed to establish the connection between all the latent constructs, as shown in Figure 4.1 - 4.6 *compliance* related significantly and positively with *Communication* (*r* = 0.17), *Incentive* related significantly and positively with *compliance* (*r* = 0.57), *Incentive* related positively and significantly with *compliance* (*r* = 0.54), *Incentive* related positively and significantly with *Governance* (*r* = 0.84), *Governance* related positively and significantly with *Competence* (*r* = 0.90),

Competence related positively and significantly with *Control* (*r* = 0.84), and *Communication* related positively and significantly with *Control* (*r* = 0.19).

4.7.2 SEM results after modification

After modification, the constructs showed factor loadings ranging from 0.36 to 0.88. The indices of the modified model were found to fit the model (see Figure 4.7).

Model A7: CMIN = 779; *df* = 352; CMIN/*df* =2.21; *p* = 0.00; GFI = 0.90; NFI = 0.85; CFI = 0.91; TLI = 0.90; RMSEA = 0.05; RMR = 0.05
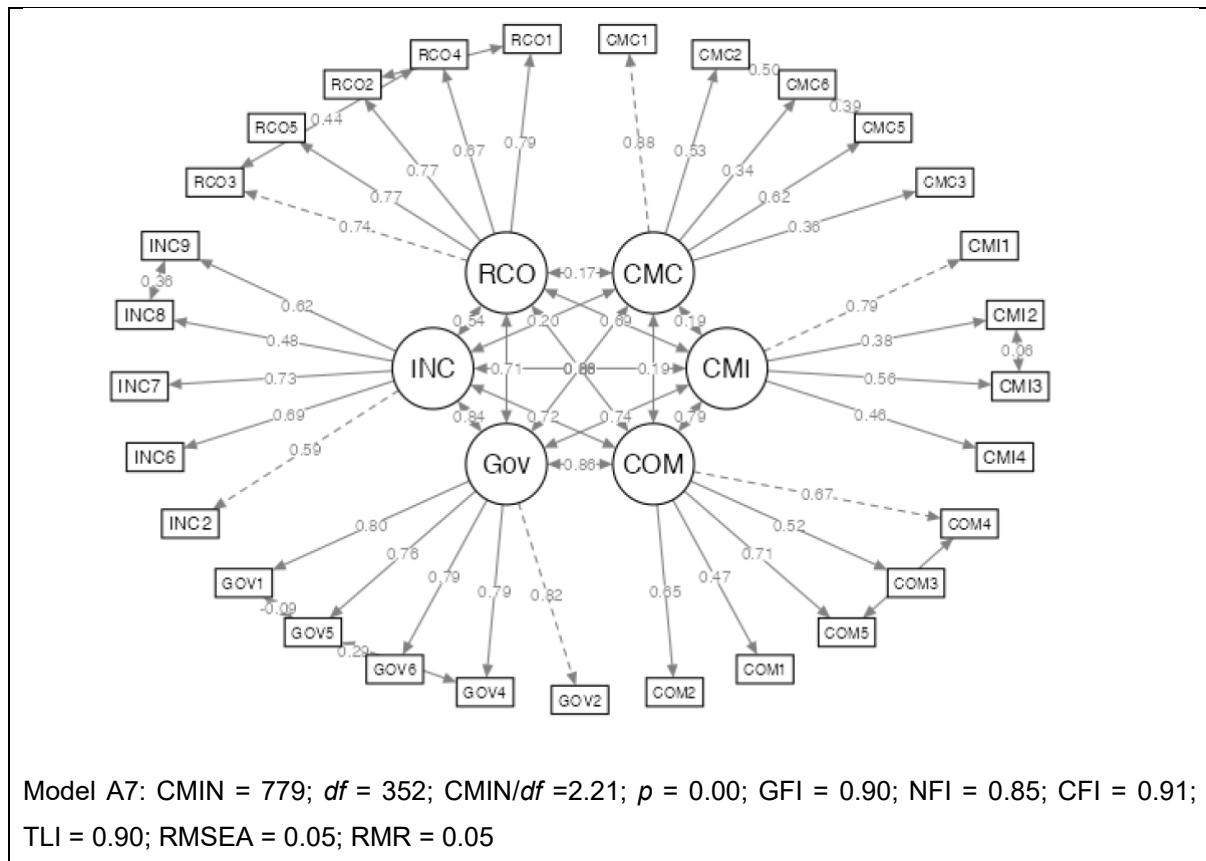
Figure 4.7: Risk Culture fit model

Source: Author's own compilation

4.8   Assessing Discriminant Validity: M, SD, Correlations, and AVE

Table 4.15 reports the SD, M, Constructs' Inter-Correlation, CR, and AVE of the following six constructs of risk culture: *Communication*, *Control*, *Competence*, *Governance*, *Incentive*, and *Compliance*.

Table 4.15: Discrimination validity and descriptive statistics measures

Constructs correlation matrix, M, SD, and AVE extracted for first-order factor

Order-factor	CR	AVE	*M*	*SD*	CMC	CMI	COM	GOV	INC	RCO
CMC	0.69	0.34	2.76	1.15	—	0.45***	0.33*	0.37***	0.28**	0.34**
CMI	0.72	0.39	3.56	0.69		—	0.53**	0.48**	0.41**	0.70***
COM	0.74	0.37	3.89	0.61			—	0.69*	0.54**	0.65**
GOV	0.89	0.63	4.08	0.70				—	0.68**	0.60**
INC	0.76	0.40	3.84	0.67					—	0.43**
RCO	0.86	0.56	4.04	0.73						

Note. CR = composite reliability; AVE = average variance extracted; CMC = *Communication*;
CMI = *Control*; COM = *Competence*; GOV = *Governance*; INC = *Incentive*; RCO = *Compliance*
*$p > 0.05$; **$p > 0.001$

4.9 INTERPRETATIONS AND DISCUSSION OF THE RESULTS

4.9.1 SEM

Based on Figures 4.1. to 4.6, CFA and SEM were performed to validate the risk culture measurement that emerged from the interrelationships between *Communication*, *Control*, *Competence*, *Governance*, *Incentive*, and *Compliance*, as indicated in Figure 4.7. Six measurement models (see Figure 4.7) were integrated to validate *Risk culture* using SPSS version 28.

Following the integration of the six measurement models, the fit indices indicated a poorer overall Measurement Model 1. After modifying some errors from the constructs displayed in Figures 4.1 to 4.7, the second overall measurement model was an acceptable model with good fit indices (CMIN = 779; *df* = 352; CMIN/*df* =2.21; *p* = 0.00; GFI = 0.90; NFI = 0.85; CFI = 0.91; TLI = 0.90; RMSEA = 0.05; RMR = 0.05) concerning the constructs of *Risk culture*, as demonstrated in Table 4.16.

As noted in Chapter 1, the purpose of the research study was to validate a risk culture measurement instrument in the South African banking industry. The outcomes of the present study suggest that most participants were aware that risk culture in the South African financial sector is made up of constructs such as communication, control, competence, governance, incentive, and awareness of compliance risk. This implies

that well-trained, informed, and rewarded employees are likely to develop a general understanding of identity and be motivated to undertake risk-taking behaviour (Kunz & Heitz, 2021).

Table 4.16 shows that the values of the goodness-of-fit indices of the SEM related to *Risk culture* were at an acceptable level for validating a model (Hair *et al*., 2019).

Table 4.16: GFIs

Fit indices of the SEM	Cut-off for good indices	Value	Interpretation
CMIN/*df*	≤ 5.0 to 2.0 Depending on the sample size and the number of available parameters (Hair *et al*., 2019)	2.21	Accepted
p-value	< 0.05 (Hair *et al*., 2019)	0.000	Accepted
Bentler-Bonett NFI	Hu and Bentler (1999) suggested a range of 0 to 1	0.85	Accepted
GFI	From 0 to 1, but 0.90 is also acceptable (Kline, 2016)	0.90	Accepted
TLI	> 0.9 (Hair *et al*., 2019)	0.90	Accepted
CFI	≥ 0.9 to 1	0.91	Accepted
RMSEA	0.05 ≤ 0.08 (Kline, 2016)	0.05	Accepted
RMSR	≤ 0.08 (Kline, 2016)	0.05	Accepted

Source: Author's own compilation

Similarly, the indices' fit values supporting the validation of the risk culture measurement instrument were consistent with the values and GFIs suggested by Olivier and Martins (2018) and Hair *et al*. (2019). This showed that the constructs might enhance risk culture in the South African financial sector. The GFIs in Table 4.16 indicated an acceptable fit model of risk culture.

Tables 4.2 to 4.7 are relevant to the sections that follow.

The results related to the reliability were determined using Cronbach alpha coefficients. In addition, the results displayed in Tables 4.2 to 4.7 indicated the

reliability of the instrument since the Cronbach alpha coefficient values ranged from 0.677 to 0.904, i.e., greater than 0.6

Tables 4.8 to 4.13 are relevant to this section.

As shown in Tables 4.8 to 4.13, explanatory factor analysis (EFA) was performed using principal construct analysis (PCA) and varimax rotation. All six constructs (*Communication*, *Control*, *Competence*, *Governance*, *Incentive*, and *Compliance*) displayed KMO index values ranging from 0.645 to 0.904, regarded as well above the acceptable level, with factor loadings ranging from 0.625 to 0.852, thus above 0.5, except for items RCO6 (0.499) and CMC3 (0.487), which were regarded as problematic because of the loading being below the cut-off of 0.50 (Pallant, 2016). All six factors had eigenvalues ranging from 2.032 to 4.154. The eigenvalues were higher than the permissible level, which is 1 (Pallant, 2016). Therefore, the KMO index values, loadings values, and eigenvalues of the six constructs confirmed the validity of the measurements of the constructs of *Risk culture*.

4.9.2 Interpretation of M, SD, Correlation, and AVE

Before evaluating discriminant validity, the inter-construct correlation coefficient was utilised to determine the correlation of constructs. According to the rule of thumb, a score great than 0.85 indicates weak discriminant validity (Hair *et al*., 2019). As Fornell and Larcker (1981) recommended, the square root of the AVE of each construct was compared to the inter-construct correlations to evaluate whether it was larger than the construct's correlations.

Table 4.14 showed that, with the exception of *Communication*, the composite reliability of all the constructs exceeded the 0.70 threshold. In addition, the table showed that the discriminant validity of the model constructs had been attained and that none of the inter-construct correlation coefficients was below the 0.85 threshold. However, the results did not indicate that the measuring model had appropriate discriminant validity except for *Governance* and *Compliance. T*he square roots of the AVE were outside of the 0.50 allowed range.

Table 4.14 also indicated that *Governance* obtained the highest mean scores (M = 4.08; SD = 0.70), *Compliance* (M = 4.03; SD = 0.73), *Competence* (M = 3.89;

SD = 0.61), *Incentive* (M = 3.84; SD = 0.67), and *Control* (M = 3.56; SD = 0.69), and the lowest mean scores on *Communication* (M = 2.76; SD = 1.15). The correlation matrix in Table 4.14 indicated that the inter-construct correlation coefficients between the constructs were all significant and positive at $p \le .05$, with an effect size ranging from small to medium to large.

Inter-construct correlation coefficients between *Communication* and *Control* were significant and positive at $p \le .05$, with a medium effect size. The inter-construct correlation coefficients between *Communication* and *Competence* were significant and positive p ≤ .05, with a medium effect size. The inter-construct correlation coefficients between *Communication* and *Governance* were significant and positive at $p \le .05$, with a medium effect size. The inter-construct correlation coefficients between *Communication* and *Incentive* were significant and positive at $p \le .05$, with a small effect size. The inter-construct correlation coefficients between Communication and *compliance* were significant and positive at $p \le .05$, with a medium effect size. The inter-construct correlation coefficients between *Control* and *Competence* were significant and positive at $p \le .05$, with a large effect size. The inter-construct correlation coefficients between *Control* and *Governance* were significant and positive at $p \le .05$, with a medium effect size. The inter-construct correlation coefficients between *Control* and *Incentive* were significant and positive at $p \le .05$, with a medium effect size. The inter-construct correlation coefficients between *Control* and *Compliance* were significant and positive at $p \le .05$, with a medium effect size.

The inter-construct correlation coefficients between CMC and GOV were significant and positive at $p \le .05$, with a large effect size. In addition, inter-construct correlation coefficients between CMC and INC were significant and positive at $p \le .05$, with a large effect size. Moreover, inter-construct correlation coefficients between CMC and RCO were significant and positive at $p \le .05$, with a large effect size. The inter-construct correlation coefficients between GOV and INC were significant and positive at $p \le .05$, with a large effect size. In addition, inter-construct correlation coefficients between GOV and RCO were significant and positive at $p \le .05$, with a large effect size. Inter-construct correlation coefficients between *Incentive* and *Regulatory and control* were significant and positive at $p \le .05$, with a medium effect size.

Based on the effect sizes of the inter-construct correlation coefficients, as indicated by Pallant (2016), the six constructs significantly correlate as constructs of risk culture.

4.9.3　Interpretation of the results of the CFA

The study evaluated CR, standardised factor loading, AVE, and inter-construct correlations to examine the internal consistency of the constructs, as well as the convergent and discriminant validity of the suggested confirmatory model of the connections. The constructs *Control*, *Competence*, *Governance*, *Incentive*, and *Compliance* were confirmed to be reliable, as they exceeded 0.70. Even though *Communication*'s CR was below this threshold (0.6), it was approved due to the size of the sample (Tabachnick & Fidell, 2019).

The model's convergent validity was evaluated by accepting a small number of standardised factor loadings, and an AVE cut-off of 0.5 was regarded as acceptable to perform CFA. In the same vein, factors with an AVE within the permissible range as the CR was more than the acceptable level (0.60) (Lam, 2012) for the purpose of the current study, as indicated in Table 4.16. Fornell and Larcker's (1981) approach of analysing inter-construct correlations (0.85) and contrasting the square root of the AVE with inter-construct correlations was employed to test discriminant validity. Only two square roots of the AVE were greater than the corresponding inter-construct correlations, and no inter-construct correlations above acceptable values were discovered. The results revealed that the measures lacked discriminant validity, as the square roots of the AVE were smaller than numerous inter-construct correlation coefficients.

Table 4.17: Composite reliability and convergent and discriminant validity of model summary

Construct	Factor loading range	CR	AVE	AVE vs ICC
CMC	[0.360-0.883]	0.69	0.34	</<
CMI	[0.406-0.819]	0.72	0.39	</<
COM	[0.480-0.635]	0.74	0.37	</<
GOV	[0.792-0.805]	0.89	0.63	>/<

INC	[0.478-0.605]	0.76	0.40	</<
RCO	[0.727-0.794]	0.86	0.56	>/<

Note. AVE = average variance extracted; CR = composite reliability; ICC = inter-construct correlation

4.10   CHAPTER SUMMARY

Based on the items and dimensionality results, the CFA of the six constructs and the convergent and discriminant validity showed a reasonable and acceptable level of fit indices for the model. Therefore, the Risk Culture Measurement Instrument was validated. Chapter five provides the recommendations and conclusions of the study.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1   INTRODUCTION

The previous chapter reported the results of the present study. The current chapter summarises the main results in relation to the research questions, as well as the contribution to current literature and the body of knowledge concerning the importance of risk culture in the banking sector. The chapter concludes with the limitations of the research study, together with recommendations and proposals for future studies.

5.2   RESEARCH OVERVIEW

The main research question of the study, as in Chapter 1, was: Is there a reliable and valid risk culture instrument for use in the South African banking sector? To achieve the main question of the research study, the following secondary research question led to the enquiry:

- What are the constructs related to a risk culture measurement in the South African banking sector?
- What is the factorial structure of constructs related to a risk culture measurement instrument?
- Does the data fit the empirical model through structural equation modelling?

The following sections show that the research questions of this study were answered and achieved.

5.3   SUMMARY OF FINDINGS

The key results emanating from the previous chapter are summarised below, in line with the research questions.

5.3.1 What constructs are related to risk culture in the banking industry

The study found that six constructs are reliable and valid for measuring the risk culture of a financial organisation, namely *Communication*, *Control*, *Competence*, *Governance*, *Incentives*, and *Compliance*. Kalaitzake (2017) views risk culture as a risk-management aspect necessary for effective risk management. Risk culture comprises beliefs, norms, values, knowledge, and the experiences of the people interacting with an organisation (Hillson & Simon, 2020).

The *Incentive* construct has five validated items (INC2, INC6, INC7, INC8, and INC9), with a strong correlation between the items. The results show that incentives influence risk culture at a South African bank. The finding concurs with the outcomes of a study in the banking sector by Tam (2017), who found that incentives to influence risk culture can take more than one form, such as performance-related remuneration, profit-based remuneration, and access to loans. Thus, incentives positively influence the risk culture when calibrated to encourage employees and management to comply with the risk policies.

The *Governance* construct has eight validated items (GOV1 to GOV8), with a strong correlation between the items. The results show that risk culture in a South African bank is influenced by governance. This result aligns with Van Asselt and Renn's (2011) study, which found that governance strongly influences an organisation's risk culture. Positive risk culture is promoted through, *inter alia*, risk committee reviews and other governance structures within and outside an organisation (Wood & Lewis, 2018).

The *Competence* construct has five validated items (COM1 to COM5), with a strong correlation between the items. The results show that risk culture at a South African bank is influenced by competence. Empowering employees through risk skills will thus assist in building a good risk culture. This result is similar to that of Nduku (2020), who observed that risk awareness training and competence promote a positive risk culture in organisations.

The *Compliance* construct has six validated items (RCO1 to RCO6), with a strong correlation between the items. The results show that risk culture at a South African bank is influenced by two regulatory measures and two compliance measures, consistent with results from Vasvári (2015), Sheedy (2016) and Tam (2017).

The *Control* construct has four validated items (CMI1 to CMI4), with a strong correlation between the items. The results show that risk culture at a South African bank is influenced by control and mitigating measures of avoidance, transference, and acceptance. According to Carretta *et al*. (2017), control and mitigating factors influence risk culture.

The *Communication* construct has four validated items (CMC1, CMC2, CMC5, and CMC6), with a strong correlation between the items. The results show that risk culture at a South African bank is influenced by four communication measures. According to Schmitt (2017), communication is an integral part of risk management which influence risk culture. The most basic principles of risk communication that ensure risk compliance in the banking space include identifying the risk, determining the impact of the risk, implementing and communicating mitigating procedures, assessing the efficacy of the communication, and reporting the risk information (Nduku, 2020).

Governance was found to be the most important risk culture factor (M = 4.08; SD = 0.70), followed by *Compliance* (M = 4.04; SD = 0.73) and *Communication* (M = 0.37; SD = 0.61). The study shows that employees at the South African bank under study are aware that risk culture is made up of the constructs of communication, control, competence, governance, incentive, and awareness of compliance risk.

All the constructs had a Cronbach alpha above 0.7 and item-total correlations above 0.3, thus acceptable and consistent (Wild & Diggines, 2015). The composite reliabilities were all above the 0.7 threshold; thus, discriminant validity was attained. Inter-correlation coefficients were all positive and significant between the constructs.

5.3.2 What is the factorial structure of constructs of the Risk Culture Measurement Instrument

The explanatory factor analysis (EFA) using principal construct analysis (PCA) showed that all the constructs' scales were uni-dimensional, as summarised in Table 5.1.

Table 5.1: Summary of Principal Construct Analysis (PCA)

Factor	KMO value	Bartlett's test of sphericity	Eigenvalue	Variance
INC	0.765	486.355	0.765	52%
GOV	0.904	1378.015	4.154	69.23%
COM	0.785	403.852	2.526	50.51%
RCO	0.843	1022.480	3.547	59.12%
CMI	0.645	259.614	2.032	50.79%
CMC	0.598	492.665	2.479	49.59%

Source: Author's compilation

The KMO values of most factors were above 0.5, and Bartlett values were significant (p = .01) and appropriate to perform CFA. Validity was confirmed with eigenvalues at an acceptable level, above the cut-off point of 0.5 (Pallant, 2016).

The measurement model revealed a poor model fit for the *Incentive* construct, and an alternative model had acceptable indices to fit the model, as summarised in Table 5.2.

Table 5.2: Summary of Measurement Model Fit Indices

Factor	CMIN	df	CMIN/df	GFI	NFI	CFI	TLI	RMSEA	RMR	AVE	CR	Essential ratio
INC	14.12	4	3.53	0.99	0.97	0.98	0.95	0.08	0.02	0.40	0.76	>1.96
GOV	4.92	2	2.46	0.99	0.99	0.99	0.99	0.06	0.01	0.63	0.89	>1.96
COM	7.42	4	0.97	0.97	0.98	0.99	0.98	0.05	0.02	0.37	0.74	>1.96
RCO	9.88	3	3.29	0.99	0.98	0.99	0.98	0.07	0.01	0.56	0.86	>1.96
CMI	39.17	1	39.17	0.95	0.85	0.85	0.10	0.11	0.07	0.39	0.72	>1.96
CMC	4.37	3	1.46	0.99	0.99	0.99	0.99	1.04	0.06	0.34	0.69	>1.96

Source: Author's compilation

The convergent validity of the model was assessed by accepting a small number of standardised factor loadings and an AVE cut-off of 0.5, which is permissible to perform a CFA. Fornell and Larcker's (1981) recommended approach of analysing inter-construct correlations (0.85) and contrasting the square root of the AVE with inter-construct correlations was employed to test discriminant validity. Only two square

roots of the AVE were greater than the corresponding inter-construct correlations, and no inter-construct correlations above acceptable values were discovered. The results revealed that the measures lacked discriminant validity, as the square roots of the AVE were below the numerous inter-construct correlation coefficients.

5.3.3   Does the data fit the empirical model through SEM

The outcomes indicated that the first-order model of the *Risk culture* constructs proposed a poor fit. However, indices of the modified model led to a fit in the model. *Compliance* related positively and significantly with Communication (r = 0.17), *Incentive* related significantly and positively with *Compliance* (r = 0.57), *Incentive* related significantly and positively with *Compliance* (r = 0.54), *Incentive* related significantly and positively with *Governance* (r = 0.84), *Governance* related significantly an positively with *Competence* (r = 0.90), *Competence* related significantly and positively with *Control* (r = 0.84), and *Communication* related significantly and positively with *Control* (r = 0.19).

CFA and SEM were further performed to validate the risk culture measurements to generate six measurement models that validate *Risk culture*. However, integrating the six measurement models failed to yield a good overall measurement model. After adjusting for errors, a second overall measurement model was run to provide an acceptable model with good fit indices (CMIN = 779; *df* = 352; CMIN/*df* = 2.21; *p* = 0.00;   GFI = 0.90;   NFI = 0.85;   CFI = 0.91;   TLI = 0.90;   RMSEA = 0.05; RMR = 0.05). The values of the indices fit supported the validation of the Risk Culture Measurement Instrument, as these were consistent with the values and goodness-of-fit indices suggested by Olivier and Martins (2018) and Hair *et al.* (2019).

5.4   CONCLUSIONS

The conclusions for this study are drawn from the literature objectives, and the results indicate that risk culture is influenced by six factors in the banking sector (communication, control, competence, governance, incentives and compliance). The research instrument is reliable and valid to measure risk culture with an acceptable convergent and discriminant validity level, CFA, and SEM. The constructs of risk

culture inter-correlate significantly. Thus, the six constructs of risk culture may be considered in the enhancement of risk culture in South African banks.

5.5   RESEARCH CONTRIBUTIONS

The literature review findings underscore the influence of a risk culture's constructs and can be used in mitigating the impact of risk in the banking sector. The Risk Culture Framework developed from the reviewed literature is shown in Figure 5.1.
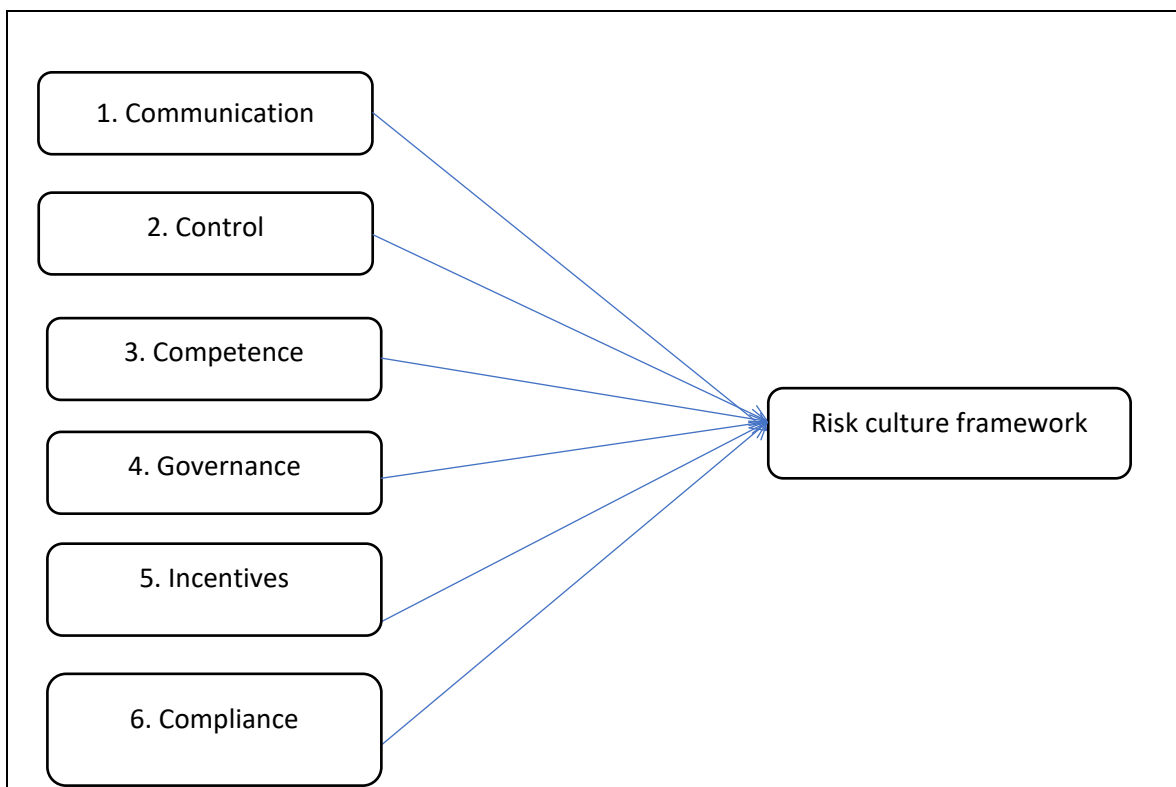

Figure 5.1: Risk Culture Framework

Source: Author's own

As indicated in Figure 5.1 above, the first Construct is *Communication*, which was found to be critical to identify, understanding, and reporting risk information. Communication is also vital in ensuring risk compliance behaviour in the banking industry.

The second Construct, *Incentive*, was observed as playing a critical role in enhancing risk culture. Workers who are rewarded are more likely to comply with and contribute to the desired risk culture.

The third Construct, *Governance* (the duty of boards of directors, management, and supervisors), instils organisational risk culture as observed by (Van Asselt & Renn, 2011).

The fourth Construct, *Competence*, was found to empower and increase employees' behaviour towards risk-culture awareness. The outcomes of the present study revealed the crucial role played by training employees and enhancing their competence to promote risk-culture awareness, as posited by Malloy *et al*. (2016). Well-trained and skilled employees can foresee the negative effect of risk on a bank's performance, as observed by Shangareev (2019).

The fifth Construct, *Compliance*, was found to improve organisational risk culture. Compliance influences employees' level of adherence and instils a sound risk culture in the organisation, as observed by Mok and Saha (2017).

The sixth Construct, *Control*, was found to have a significant influence on the risk culture of a bank. When facing threats, banks can initiate measures to control and mitigate risky behaviours to improve the risk culture, as observed by Malloy *et al*. (2016) and Kirikkaleli *et al*. (2020).

The present study validated *Risk culture* as a high-order construct based on six lower-order measures (*Communication*, *Control*, *Competence*, *Governance*, *Incentive*, and *Compliance*). First- and second-order measurement models were used to find an acceptable model. These results indicate effective measures banks can use to determine and manage their risk culture. The six constructs are critical for an organisation's leaders to understand how to implement corrective procedures and risk-management policies.

The results showed the risk culture measures in the bank that respondents considered most important. Respondents indicated that governance, awareness of compliance risk, and competence are the three most essential constructs of risk culture in the banking sector. Communication, control, and incentives were considered less important.

The study provides a research instrument that has valid and reliable constructs. This means future researchers could use this tool to carry out further research on the influence of risk culture on an organisation's performance and success. The convergent validity showed that similar concepts being measured by the instrument were the same, and discriminant validity showed that the different concepts being measured by the instrument were distinct.

This valid and reliable research tool may be useful to managers. The utilisation of a valid scale is crucial during surveys since it has been proved that an invalid measure cannot accurately measure what it purports to measure and, therefore, may yield misleading results. An unduly positive assessment may give management an invalid sense of security regarding the organisation's risk culture, and opportunities to intervene before problems emerge may be missed. Alternatively, if the assessment is unduly negative, valuable resources may be wasted to deal with a problem that does not exist.

Academically, this research study intensely reviews the literature on risk culture theory within the banking industry by systematically examining the concept of risk culture. In particular, the research study provides a knowledge base with regard to how banking organisations view and manage their risk culture. The study also discusses the main theoretical models of risk culture utilised in the banking environment, which broadens understanding of the constructs of risk culture.

5.6   RECOMMENDATIONS

The following section provides recommendations which are based on the limitations and conclusions of the research.

5.6.1   Recommendations regarding the empirical study

This study provides researchers with a validated instrument to explore further how a risk culture can be improved in banking institutions by utilising the six constructs. Researchers can further validate this risk culture instrument using longitudinal studies and large samples to minimise the likelihood of intervening events and response bias.

Future studies could use SEM to examine how risk culture impacts organisational performance.

5.6.2   Recommendations for the banking sector

In practice, policymakers and bank managers should pay attention to and integrate all six constructs of risk culture displayed in Figure 5.1 when developing policies and strategies to prevent risky actions and the effects of risk on a financial institution's performance and stability. Banks need to improve risk culture through effective communication, good governance, incentives for employees, competence, compliance, and enhanced controls.

Banks should make sure that effective processes are implemented to enhance these six constructs of risk culture. Banking organisations need more awareness and understanding of the six measures to create a well-balanced risk-culture tone. Managers should take into account the structure of risk culture in order to implement more enhanced risk-management policies. Bank managers must therefore increase their focus on the six factors of risk culture to build effective risk-management systems in the organisation. Managers may benefit from more training and development to enhance their understanding and utilisation of risk culture, too, ultimately enhancing organisational performance through robust risk management.

5.7   LIMITATIONS OF THE STUDY

The following section presents a discussion of the limitations of the study as per the literature review and empirical study.

5.7.1   Limitations: Literature review

The literature review of the research was limited by a paucity of studies investigating the enhancement of risk culture in the financial industry of South Africa.

5.7.2   Limitations: Empirical study

The exploratory nature of the present study is a limitation of the study, as it was not possible to address questions of *Why*, *When*, and *How.* The use of a small sample drawn from one South African bank is also considered a limitation of the study, and the results might not be easily generalised to the entire South African banking sector.

5.8   FUTURE STUDIES

Future research may use mixed methods, a large sample and include participants from other South African banks to ensure greater representativity and more depth and breadth. Future studies could also investigate the connection between risk culture and customer loyalty, organisation performance, risk management and firm reputation amongst South African banking sector employees.

5.9   CHAPTER SUMMARY

The chapter provided the conclusions, limitations, contributions, and recommendations for further studies on risk culture in the financial sector. The study indicated that risk culture occupies a central place in the process of managing risk in the banking sector. The outcomes of the study validated six constructs (*Control*, *Communication*, *Governance*, *Incentive*, *Competence*, and *Compliance*) as constructs of the Risk Culture Measurement Instrument.

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APPENDICES

Appendix 1: Questionnaire

Cover letter

My name is Mpho Olga Mukondeleli, and I am currently enrolled at UNISA for a Master of Commerce degree. I am researching the validation of a risk culture instrument in South Africa. I am inviting you to participate in this study by completing the attached questionnaire. This research is for academic purposes only and must adhere to the requirements for a Master of Commerce Degree at UNISA. Your input to this research will be greatly appreciated. To complete the survey, it should take you no more than 20 minutes to finish. Your participation in this survey is completely voluntary, and you may withdraw from participation at any time without penalty. Your responses will remain anonymous and confidential and will not be linked to you in any way whatsoever. Your participation will contribute to findings that will add to the academic body of knowledge and may be used for academic purposes such as publication in a dissertation, conference papers or journals.

Thank you for your participation. Should you have any questions or concerns, please feel free to contact me or my supervisor. The contact details are provided below.

Student Name: Mpho Olga Mukondeleli	Supervisor: Prof A Mutezo
Email: mpho.mukonde@gmail.com	Email: muteza@unisa.ac.za
Phone: 0814207539	Phone: 0124294595

I, the respondent, consent to participate in this survey

Yes	No

Please answer the survey questions from your perspective and mark with a cross (X) where applicable.

SECTION A: BIOGRAPHIC INFORMATION

Please indicate your position in the organisation:

1	Junior role	
2	Consultant/ Specialist	
3	Manager	
4	Executive level	

How many years of experience do you have in a banking environment?

1	0 – 1 year	
2	2 – 3 years	
3	4 – 5 years	
4	6 and more years	

Section B
By marking X in the appropriate box, indicate the extent to which you agree or disagree with each of the following statements.

INCENTIVE SCALE:					
3. In my area of responsibility (depending on your role, this means your function, department or business) …	*Strongly disagree*	*Disagree*	*Neutral*	*Agree*	*Strongly agree*
it is okay to raise "red flags					
I get 'early warning signs about impending issues					
most employees are not hesitant to take risks					
mechanisms are in place to recognize judicious risk-taking (e.g. awards)					
risk-taking has a positive effect on compensation and/or career advancement					
mechanisms are in place to provide an inclusive environment for decision making					
issues can be raised, even when they are 'bad news'					
I can choose the methods appropriate to a task					
I can determine how much time I spend on tasks					
I have the opportunity for independence in how I do my job					
GOVERNANCE SCALE:					

4. In my area of responsibility, effective processes are in place to …	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
stop projects that have turned 'bad' even if already well underway					
provide an 'open door' environment to discuss risk issues as they arise					
identify areas that have become exposed to significantly increasing levels of risk					
learn from past mistakes (e.g. analysis of losses and near misses)					
alert personnel responsible for risk management when risk issues arise					
review risks as part of the regular management reporting cycle					
escalate risk issues to the appropriate management level or committee					
allocate ownership for specific risks					

COMPETENCE SCALE:					
5. In my area of responsibility, risk management activities are …	Strongly disagree	Disagree	Neutral	Agree	strongly agree
directed to avoid negative consequences					
driven by prior incidents and losses					
directed to realize positive outcomes					
driven by business opportunities					
implemented in response to regulatory requirements					

REGULATIONS AND COMPLIANCE SCALE:					
6. In my area of responsibility, emphasis is placed on …	Strongly disagree	disagree	Neutral	Agree	strongly agree
Implementing procedural checks and controls					
conforming to standards and certifications					
addressing regulatory demands					
setting limits and authorities for individuals or groups of individuals					
reviewing limits and authorities for individuals or groups of individuals					
verifying that employees are compliant with prevailing regulations					

CONTROL SCALE:					
7. In my area of responsibility, if things go wrong, effective processes are in place to …	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
allocate individual responsibility for failures					
explore the causes of errors					

sanction personnel that made errors					
provide a no-blame environment to discuss the causes of errors					
establish disciplinary actions for errors caused by violations of policies/procedures					

COMMUNICATION SCALE:					
9. Please indicate over the period of a month how often, on average, you get in touch by email or phone with …	*Never*	*Monthly*	*Weekly*	*Every 2nd day*	*Daily*
group risk personnel					
1st line risk personnel (e.g. risk teams in my business unit/division)					
the head of my business unit/division					
my direct line manager					
10. Please indicate, over the period of a month, how often, on average, you communicate in a one-to-one meeting with …	*Never*	*Monthly*	*Weekly*	*Every 2nd day*	*Daily*
group risk personnel					
1st line risk personnel (e.g. risk teams in my business unit/division)					
the head of my business unit/division					
my direct line manager					
11. Please indicate, over the period of a month, how often, on average, you participate in group meetings …	*Never*	*Monthly*	*Weekly*	*Every 2nd day*	*Daily*
group risk personnel					
1st line risk personnel (e.g. risk teams in my business unit/division)					
the head of my business unit/division					
my direct line manager					

Thank you for completing the survey.
Mpho Mukondeleli

Appendix 2: Ethical Clearance Certificate

UNISA | university of south africa

UNISA DEPARTMENT OF FINANCE, RISK MANAGEMENT AND BANKING ETHICS REVIEW COMMITTEE

Date: 01 December 2021

Dear Ms MO Mukondeleli

ERC Ref #2021/CEMS/FRMB/016
Name : Ms MO Mukondeleli
Student #:33931615
Staff #:

Decision: Ethics Approval from 01 December 2021 to 30 November 2024

Researcher(s): Name Ms MO Mukondeleli

E-mail address: 33931615@mylife.unisa.ac.za, telephone 0718664591

Supervisor: Name: Prof A Mutezo

Email address: muteza@unisa.ac.za, telephone 012 429 4595

Working title of research:
Enhancement of risk culture in a South African bank

Qualification: MCOM BUSINESS MANAGEMENT

Thank you for the application for research ethics clearance by the Unisa DFRB Ethics Review Committee for the above-mentioned research. Ethics approval is granted for the period 01 December 2021 to 30 November 2024

The Low risk application was reviewed by the DFRB Ethics Review Committee 25 November 2021 in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.

2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the DFRB Committee.

3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.

4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.

5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.

6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.

7. No fieldwork activities may continue after the expiry date (2024). Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

The reference number 2021/CEMS/FRMB/016 **should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.**

Yours sincerely,

Signature
Deputy Chair of DFRB ERC : Ms S Mare
E-mail: mares@unisa.ac.za
Tel: (012) 429- 8222

Executive Dean : Prof T Mogale
E-mail: mogalemt@unisa.ac.za
Tel: (012) 429-4805

URERC 25.04.17 - Decision template (V2) - Approve

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