Cape Peninsula University of Technology

THE VALUE OF CONTEXT AWARENESS WITHIN INFORMATION TECHNOLOGY AUDIT AND GOVERNANCE

by

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DECLARATION

I, Theo Le Roux, declare that the contents of this thesis represent my own unaided work, and that the thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

MAR 1 1 2020

Signature

Date

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I would like to thank God for the Grace and courage throughout my research and life journey.

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Opinions expressed in this thesis and the conclusions arrived at, are those of the author, and are not necessarily to be attributed to “The Group”, Premier FMCG (my employer) and any other research or private body.

ABSTRACT

A shared common understanding or context awareness (CA) of IT Audit and Governance among all the internal stakeholders of a business remains an important factor. This context awareness is needed between the business itself, the IT department, and the Audit and Risk functions of the business.

The research problem states that there is a lack of shared context awareness among all stakeholders when conducting IT audits and implementing IT Governance. To answer the research questions, a case study research strategy was followed using an International Services Group of companies operating from South Africa. The case study offered a diverse group of companies and vast experience in the South African Services, Trading, and Distribution sector. The diversity of this group of companies made it a perfect candidate for understanding context and the value of context in IT when conducting IT audits.

The following research questions were asked: i) What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance? ii) How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

The aim of the study was to explore the value of context awareness within IT Audit and Governance in order to identify the value of shared context understanding.

Data collection was done by means of interviews using semi-structured questionnaires and an interview guide. Qualitative data analysis techniques were adopted for this research. The conclusion of the study highlights the importance of a collective understanding of the business's context in order to obtain alignment in business, IT, and Audit. It refers to the same or a similar understanding of the business processes; this takes time and is unique on all levels.

Keywords: Context awareness, IT audit, IT Governance, shared context understanding, ubiquitous computing, Artificial Intelligence, machine learning, business process.

DEDICATION

This study is dedicated to that one special person in my life, may she always know: she is never-ever alone. “Never stop looking up at night”.

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GLOSSARY OF TERMS

Term	Description
Artificial Intelligence	It is the ability of a computing device or machine to exhibit human-like intelligence, for example, solving a problem without the use of hand-coded software containing detailed instructions (MacCann, 2017).
COBIT	Control Objectives for Information and Related Technologies is a good-practice framework created by the international professional association ISACA for information technology (IT) management and IT Governance. COBIT provides an implementable "set of controls over information technology and organises them around a logical framework of IT-related processes and enablers" (De Haes & Van Grembergen, 2004).
Context Awareness	Context awareness refers to information that can be used to differentiate the aspects of a situation of an entity (Dey & Abowd, 1999:3). Within this study, it is seen as "shared understanding" between the stakeholders, the context about (or shared understanding of) the entity's situation, at a given point in time (Joshi et al., 2018b; Zhang et al., 2018). Context is also between the business or the entity's Management, IT, and the Risk and Audit functions of the entity (De Haes & Van Grembergen, 2004).
Continuous Auditing	Continuous Auditing is an automated method used to perform auditing activities, such as risk and control assessments, on a more frequent and regular basis (Miklos & Chan, 2017).
IT Audit	Investigating if the Information System (IS) is safeguarding assets, maintaining data integrity, and operating effectively to improve processes and ultimately achieve the organisation's goals or objectives (Davis, 2005).
IT Governance or the Corporate Governance of IT	"A system by which the current and future use of IT is directed and controlled, involving the evaluating and directing the use of IT to support the entity and monitoring its use to achieve plans. This includes strategy and policy" (ISO/IEC38500, 2015:4).
Machine Learning	"The detection, correlation, and pattern recognition generated through machine-based observation of human operation of software systems along with on-going self-informing algorithms, leading to useful predictive or prescriptive analytics" (MacCann, 2017:7).
Shared agreed understanding	Shared understanding in the context of IT Audit and Governance means a mutual or collective understanding of the entity's situation at a given point in time (Joshi et al., 2018b).
The Group	The case study selected for the study is a diverse group of companies within the South African Services, Trading, and Distribution industry. The "Group" was founded in 1988 and listed on the Johannesburg Stock Exchange in 1990. The Group owns or has significant holdings in over 300 companies and comprises a diverse company structure, making it ideal for the study. The Group has a corporate office in Johannesburg, South Africa, and employs approximately 137,000 people. Divisions of companies where the research was conducted include Automotive, Commercial Products, Electrical, Financial, Freight-Transport, Office Supplies & Print, and General Services.
Ubiquitous Computing	UBICOMP, also known as Pervasive Computing, focuses on computers everywhere surrounding humans, users, communicating with each other, and interacting with people and environments (Sadiku et al., 2018).

ABBREVIATIONS

Abbreviation	Meaning
AI	Artificial Intelligence
CA	Context Awareness
COBIT	Control Objectives for Information Related Technologies
ISO/IEC	International Standardisation Organisation
ISA	International Standards on Auditing
IS	Information Systems
IT	Information Technology
ITG	Information Technology Governance
ITGC	Information Technology General Controls
IQ	Individual Question
ML	Machine Learning
RQ	Research Question
SAM	Strategic Alignment Model
RSQ	Sub-Research Question
SF	Summary Finding
UBICOMP	Ubiquitous Computing

CHAPTER ONE: INTRODUCTION

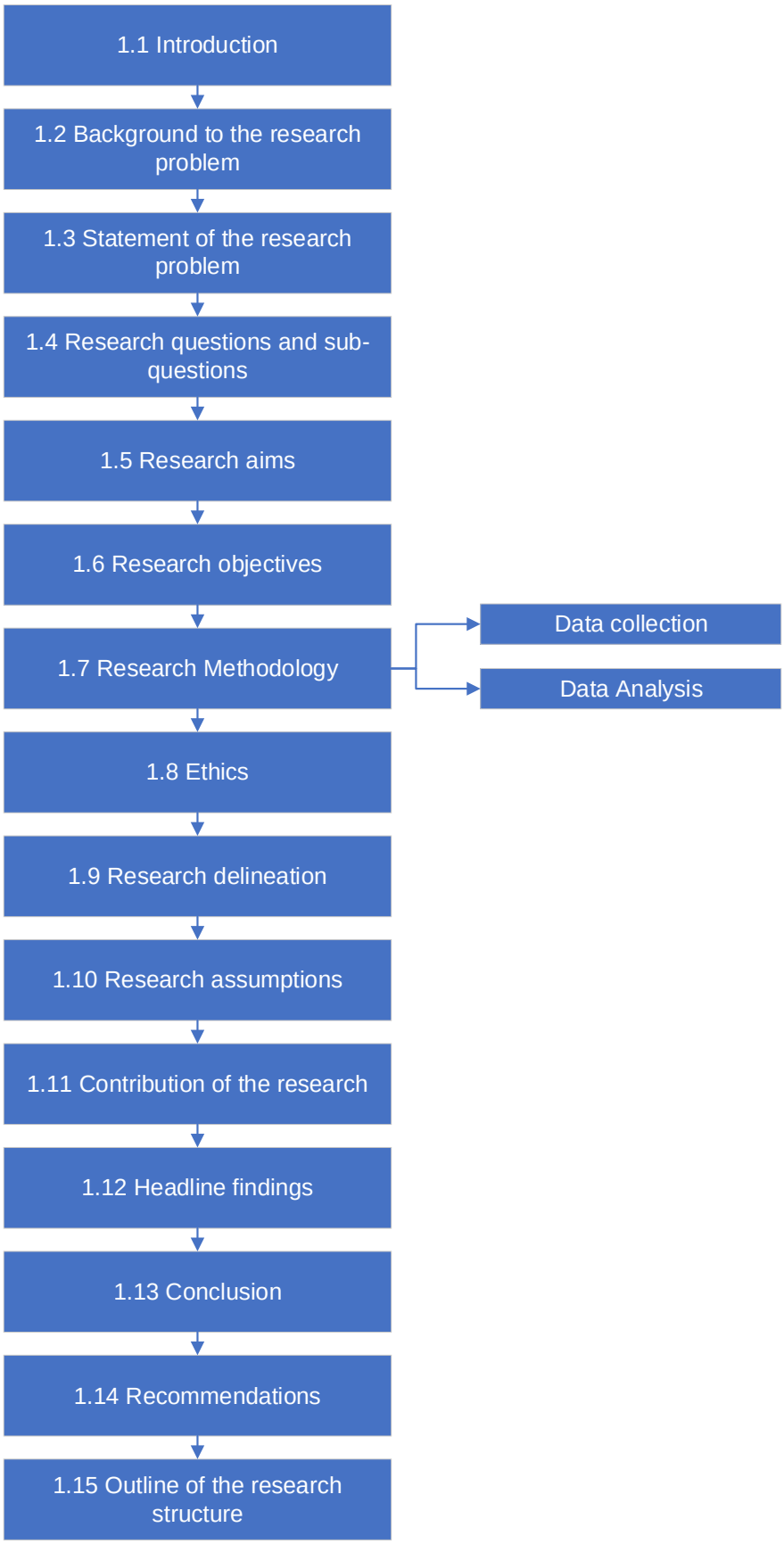


Figure 1.1: The flow for Chapter One

1.1 Introduction

Business context understanding and the shared common similar understanding of the business remains an important factor for Information Technology (IT) audits and other IT Governance implementation. As far back as 1981, De Angelo identified that the understanding and knowledge of a business's situation is a determining factor for quality audits or within audit projects. Subsequently, Wright (2014) argues that auditors should move away from blindly ticking items off checklists, with no thought for what matters, how it matters, and where it fits into the bigger picture of the projects and the larger entity, as this produces ineffective audits.

The International Standard on Auditing 315 guides financial auditors by stating that "the auditor should obtain an understanding of the entity and its environment, including its internal control, sufficient to identify and assess the risks of material misstatement of the financial statements whether due to fraud or error, and sufficient to design and perform further audit procedures" (ISA 315, 2009:264). This understanding of the entity must remain an iterative process, continuing throughout the entire duration of the audit (ISA 315, 2009). Within the subset of financial audits (i.e. IT audits and linked IT Governance implementations), it is essential that the business itself, the Audit department, and the IT department all share an agreed understanding of the business and provide the milieu for the outcome and the way it is reached (Barta, 2018).

The research was conducted at a South African based, Multinational Group of companies, with a vast array of businesses within the Group operating in the Republic. The reader is firstly introduced to the research problem through a discussion on the background of the problem. The literature review has been conducted in relation to the research problem and questions (Table 1.1). The collected data are used to identify research findings and the discussion is done with consideration of the literature and findings.

1.2 Background to the research problem

In leading up to the research statement, it is evident that a business's situation or the comprehension of the business's ever-changing 'context' is an important factor in determining the understanding of that business in time (Dey & Abowd, 1999). Understanding the corporate context of the business at any time is important, and this is even truer for Audit and IT (Barta, 2018). The Oxford English Dictionary defines the word context as "the situation in which something happens and that helps you to understand it" (Soanes & Stevenson, 2008). Applying this to business then, it would refer to the corporate interrelated conditions, business background,

situation, and conditions or frame of reference the business is currently finding itself in. The context in which a company operates, affects the company's input-output logic and impacts on the consumption choices of individuals (Carvalho, 2016).

External audits viewed and conducted in isolation have become inefficient and are not cost effective. More and more companies and organisations are looking for ways in which Internal and/or External Audit can become more cost effective and continuous (Radin, 2016). The concept of External Audit placing reliance on the internal audit function and controls of the audit organisation is known as continuous-combined assurance (Zhou, Simnett & Hoang, 2019).

Auditing is lagging behind in the use of technological techniques such as big data to gain value for the business and improve inefficiencies. This lack of progress in the adoption of technology is suggested by Gepp et al. (2018), who outline future opportunities for auditing in the context of real-time information in collaborative platforms and peer-to-peer networks. Auditors and IT Governance experts believe that perceptions on the business differ, and even more so in a diverse group (Radin, 2016). Joshi et al. (2018b) argue that there are significant differences in the perceptions of stakeholders involved in IT audits, and suggest that future research is conducted on the what, how, and why perceptions and context differences among various internal stakeholders.

The use of context awareness (CA) is particularly important for computing or applications where the context is changing rapidly (Joshi et al., 2018a). CA refers to a shared understanding of the entity's situation at a given point in time (Joshi et al., 2018b; Zhang et al., 2018). This is the same understanding that the IT function, the Risk and Audit function, and the business or the entity's Management of the entity have (De Haes & Van Grembergen, 2004).

Artificial Intelligence (AI) could potentially assist with this rapidly changing context. AI is the ability of a computing device or machine to exhibit human-like intelligence, i.e. intelligence demonstrated by machines, in contrast to the natural intelligence displayed by humans. The term is often used to describe computers that mimic cognitive functions that humans associate with the human mind, such as learning and problem solving (Russell & Norvig, 2009).

1.3 Statement of the research problem

There is a lack of shared context awareness among all stakeholders when conducting IT audits and implementing IT Governance. This lack of CA may lead to ineffective and incorrect audit outcomes and IT Governance practices.

1.4 Research questions and research sub-questions

Research questions (RQs) provide the means for guiding and directing the thinking of the researchers (Leedy & Ormrod, 2005). The two RQs are broken down into research sub-questions (RSQs) so that the collective responses of the RSQs answer the RQs. Individual questions (IQs) are made up of the RSQs. The RQs and corresponding RSQs are presented in Table 1.1.

Table 1.1: Research problem, RQs, RSQs, methods and objectives

Research Problem: There is a lack of shared context awareness among all stakeholders when conducting IT audits and implementing IT Governance.			
RQ/RSQ	**Questions**	**Objectives**	**Method**
RQ1	**What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?**		
RSQ 1.1	What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?	**Objective 1:** Identify and determine shared context information as well as the types of shared context information, and measure the stakeholders' (Business, IT, and Audit) understanding of shared context information.	Case study with semi-structured questionnaire interview
RSQ 1.2	What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?	**Objective 2:** Identify and determine the challenges internal stakeholders face in the absence of a shared context understanding.	Case study with semi-structured questionnaire interview
RSQ 1.3	What are the different perceptions within IT Audit and Governance?	**Objective 3:** Identify and examine why differences in perceptions exist.	Case study with semi-structured questionnaire interview
RQ2	**How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?**		
RSQ 2.1	How do stakeholders interact when conducting IT audits and implementing IT Governance?	**Objective 4:** Classify the various methods of how stakeholders interact.	Case study with semi-structured questionnaire interview

RSQ 2.2	How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?	**Objective 5:** Distinguish between the different perceptions of the internal stakeholders when conducting IT audits and implementing IT Governance.	Case study with semi-structured questionnaire interview
RSQ 2.3	How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?	**Objective 6:** Examine how shared context understanding can be improved among various internal stakeholders using the AI Audit System, and determine what constitutes context awareness for an AI Audit System. Furthermore, investigate how a shared context understanding using Machine Learning techniques can improve business processes.	Case study with semi-structured questionnaire interview

1.5 Research aim

The aim of the study was to explore the value of context awareness or shared context understanding within IT Audit and Governance. A further aim was to explore the possibility of using AI in the IT Audit and Governance process.

1.6 Research Objectives

1.6.1 Objective 1

Identify and determine shared context information as well as the types of shared context information, and measure the stakeholders' (Business, IT, and Audit) understanding of shared context information.

1.6.2 Objective 2

Identify and determine the challenges internal stakeholders face in the absence of a shared context understanding.

1.6.3 Objective 3

Identify and examine why differences in perceptions exist.

1.6.4 Objective 4

Classify the various methods of how stakeholders interact.

1.6.5 Objective 5

Distinguish between the different perceptions of the internal stakeholders when conducting IT audits and implementing IT Governance.

1.6.6 Objective 6

Examine how shared context understanding can be improved among various internal stakeholders using the AI Audit System, and determine what constitutes context awareness for an AI Audit System. Furthermore, investigate how a shared context understanding using Machine Learning (ML) techniques can improve business processes.

1.7 Research methodology

The research design and the methods adopted are discussed in detail in Chapter Three. For this study, a subjective ontological stance was followed, as the researcher viewed himself within the real world and was part of the case used for the research (Neuman, 2010). The research adopted an interpretivist epistemological position, since he interpreted the data collected from the interviewees to make claims about the truth.

To answer the RQs and RSQs, a case study research strategy was followed using the large national corporate group of companies consisting of diverse companies.

The unit of analysis was a group of companies (known as “The Group”) operating internationally, but with the head office is South Africa. The unit of observation was the individual participants from IT Audit and Governance, namely Management and Finance, Audit and Risk, and the IT stakeholders or departments of the different companies within the Group. A non-random sample of 18 participants was selected purposively and conveniently. The sample consisted of Chief Executive Officers (CEOs or Business Executives), Chief Financial Officers (CFOs – Business or IT), Chief Information Officers (CIOs – IT Department), Audit and Risk Managers, Audit Executives, and Subject Matter Experts.

1.7.1 Data collection

Neuman (2010) identifies several methods to collect data, including the analysis of existing documents, observations, interviews, and semi-structured questionnaires. Data collection was done by means of interviews using semi-structured questionnaires and an interview guide.

1.7.2 Data analysis

This research made use of qualitative data analysis techniques. From the quality-checked transcriptions, key words and key concepts were identified, summarised, organised, and categorised. The summarised and categorised data were then further put through a thematic analysis process.

1.8 Ethics

The researcher ensured that ethical principles were rigorously applied to the study. Throughout the research process, the researcher adhered to ethical norms, acted with integrity, and observed the required and recommended ethical principles essential for this research. Principles followed are stipulated by CPUT, Bryman (2012), and du Plooy-Cilliers, Davis and Bezuidenhout (2014).

1.9 Research delineation

The research used a case study of sample companies within the Holding company. This research did not create a model or a framework for context, but rather determined whether there is value in understanding context within IT Audit and Governance.

1.10 Research assumptions

Assumptions are often necessary beliefs that have to be stated for the proposed research to be conducted, but these beliefs cannot be proven (Simon & Goes, 2013). The following research assumptions were stated for this study:

i. All participants in this study answered all the questions honestly and factually. Participation in the study was voluntary and anonymous. Information gathered during the research was used solely for the purpose of this study and effort was made to ensure the confidentiality of participants' personal information. All participants provided verbal and written consent for the study. All participants were aware that participation could be withdrawn at any time and any question could be declined.
ii. The sample of companies within the Group is representative of all the companies and the population of the stakeholders selected.
iii. The inclusion criteria of the sample were appropriate, which ensured that the participants all experienced the same or a similar phenomenon of the study.
iv. Participants displayed a sincere interest in participating in the research without alternative motives such as getting a better grade in a course in the case of college students or impressing their job supervisor; they freely and willingly agreed to be part of the study.

1.11 Contribution of research

This research may improve IT Audit and Governance and identify how shared context understanding can be created within an IT Audit System using machine learning techniques to improve business processes. In short, the research contributes to the value created through CA and/or shared context understanding.

1.12 Headline findings

What constitutes CA? Creating context and Business-IT alignment is important; it indicates a common understanding of the business processes. In an endeavour to answer RSQ 1.1, it is clear that context understanding of a business by all the stakeholders is a top-to-bottom in-depth similar understanding of the business processes.

Context is unique for each organisation, department, and individual. The shared part of ‘shared CA’ is the similar comprehension of the ‘how’ of the business by different role-players, in this case, the three stakeholders. An individual's personal background and experience affects shared context understanding. This is evident from the responses of (especially) auditors who attempt to understand the risks of the business. The lack of context creation is due to the auditor’s background and level of experience in understanding the specific business’s processes. The lack of a shared business process understanding then in turn affects the way risks and business priorities are understood. Business understanding is crucial for creating synergies in priorities and risk management and is becoming increasingly important.

Furthermore, it is evident from the literature and from the interviews that Business-IT alignment, and now even Business-IT Integration, will contribute hugely to a shared common understanding in IT Audit and Governance. Business is not always involved in audits and risks, but if IT is the business, and technology with digital maturity objectives are integrated within the business capability, one will see a vast improvement in the shared understanding of auditors and business regarding the business processes. Technology integration into the business that ensures management -IT alignment is cardinal not only to business success, but also to the agility and sustainability of the business.

Context creation takes time and effort to build up over a lengthy period. Change in Audit stakeholder personnel does not advance institutional context, knowledge, experience, and organisational wisdom. It is clear that historical context retention or keeping record of context is very important to bring everyone to the same understanding quickly. This also speaks true to the fact that people understand a situation better if they have an enhanced understanding of the background context and bigger picture context.

From the study, it is clear that there is a difference in objectives and interest between External Audit compared to Internal Audit, Management, and the IT stakeholders. One has to differentiate between Internal Audit and External Audit, as

this seems to be the focus of business value adding. External Audit does not add value to the business due to the faultfinding mentality of the external auditors. External Audit partners do not invest sufficient time and effort in gaining context about the business they need to understand. This is detrimental to shared context awareness among all stakeholders.

With internal audits, the interaction between Management, Finance, and IT is continuous and integrated as part of business, while external audits are conducted annually as per instruction from Management. External Audit's perception is sceptical and prescriptive. Internal Audit is different; the communication, alignment, and team approach all contribute to a positive collective relationship. The function of Internal Audit is perceived as adding value, while External Audit's function and interaction is seen as compulsory. To be proactive in seeking controls for real business risks, External Audit needs to work with Internal Audit to create a more continuous audit environment coupled with systems and ML predictions.

1.13 Conclusion

A collective understanding of a business's context is important for alignment in business, IT, and Audit. It refers to the same or a similar understanding of the business processes; this takes time and is unique on all levels.

1.14 Recommendations

The recommendation of the study is that external audit needs to invest in establishing and maintaining a working mutual relationship and communication system with a database of business processes for clients and engagements. Business, together with Audit, need to ensure consistent and constant communication and involvement throughout the year and not only during engagement or implementations.

Finally, it is clear from the study that the value of an AI Audit System needs to be more than merely an audit system. It can and must add additional value. It can also be used as a proactive management system to address the controls that improve business processes proactively. Applying context to a system that is able to maintain and build historical, institutional, and business process context provides all stakeholders not only with a continuous proactive management system, but also adds value in terms of more efficient and effective audits.

1.15 Outline of the research structure

Chapter One

This chapter covers the introduction of the study, which includes a general introduction as well as the research problem, aim, objectives, assumptions, design and contribution.

Chapter Two

This chapter covers the literature review, which includes an overview of the key concepts of the study. The review is based on the keywords and concepts derived from the title, problem statement, research questions, aim, and objectives of the study.

Chapter Three

This chapter covers the research methodology, approach, strategy, data collection, data analysis, data validation, and ethical considerations.

Chapter Four

Chapter Four covers the results and findings, the responses to the research questions, findings to the research questions, and the summary findings.

Chapter Five

This chapter includes a detailed discussion on the themes in relation to the research sub-questions.

Chapter Six

The sixth and final chapter contains the conclusion and recommendations of the study.

CHAPTER TWO: LITERATURE REVIEW

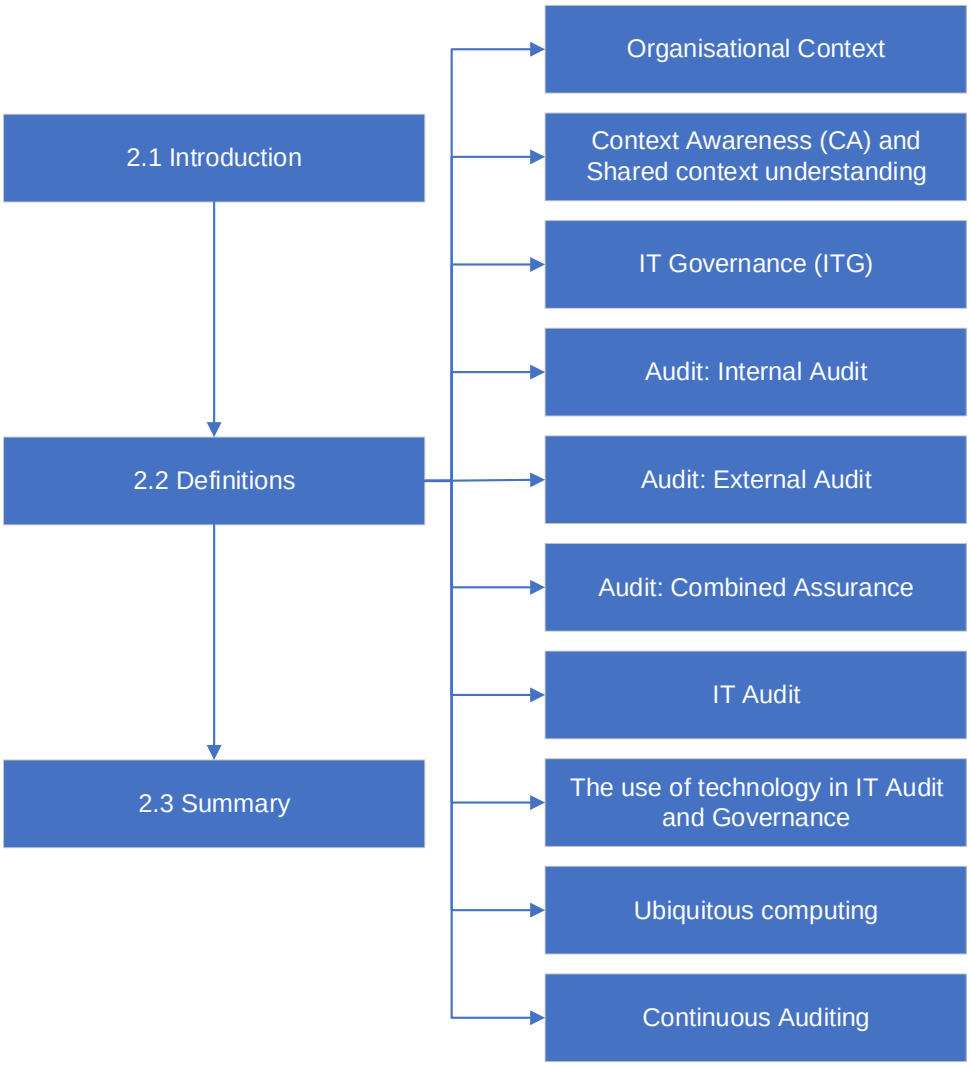


Figure 2.1: The flow for Chapter Two

2.1 Introduction

Shared common and similar understanding of the business context is important for Information Technology (IT) audits and other IT Governance implementations when evaluating audit and risk reports. As stated in section 1.3, there is a lack of shared context understanding of the business by all internal and external stakeholders within IT Audit and Governance. This lack of CA could lead to ineffective and incorrect audit outcomes and IT Governance practices. In order to explore the challenges laid out in the problem statement, two primary research questions were formulated: i) What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance? ii) How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

The problem statement and research questions were used as guidelines for the literature review. This was done by identifying keywords and concepts from the problem statement, research questions, and aim of the study. These keywords and concepts were used as search criteria for the Cape Peninsula University of Technology (CPUT) library and online databases. Databases such as Google Scholar, Scopus, Emerald, and ProQuest were searched. The review of the literature follows the process shown in Figure 2.1. Theoretical perspectives regarding the problem at hand are discussed.

2.2 Definitions

The following section provides the definitions used in this research.

2.2.1 Organisational context

In order to cope with competition and to ensure business success, every organisation has to be completely aware of its situation within the market and of the way in which internal and external elements may influence this development. All these are encountered under the generic term “organisational context” (Gaspara et al., 2018). It is a combination of external and internal issues relevant to the organisation’s purpose and strategic direction, and it affects the organisation’s ability to achieve the intended result(s) of the quality management system. These results may refer to products, services, investments and behaviour towards the interested parties (Gaspara et al., 2018).

2.2.2 Context awareness (CA) and shared context understanding

Context awareness is also referred to as the shared understanding of the business’s situation or “context”, at a given point in time (Joshi et al., 2018b; Zhang et al., 2018). It refers to the internal and external functions (departments) of the organisation, all understanding the business context in the same way. In the case of audits, context awareness refers to the mutual (or a similar) understanding of the business (also referred to as entity) by the IT department, the Risk and Audit department, and the business’s Management (De Haes & Van Grembergen, 2004).

A shared or collective understanding of an entity’s situational context by all stakeholders is important for audit (O’Neill, 2014). The term CA originates from ubiquitous computing, or so-called pervasive computing, which sought to deal with linking changes in the environment with computer systems or business processes that are otherwise static. The term has been applied to business in relation to contextual application design and business process management issues (Rosemann & Recker, 2009).

Shared understanding in IT Audit and Governance means a mutual or collective understanding of the entity's situation at a given point in time (Joshi et al., 2018b; Zhang et al., 2018), by its Management, IT, and Risk and Audit functions (De Haes & Van Grembergen, 2004).

2.2.3 IT Governance (ITG)

IT Governance (ITG) forms an integral part of Enterprise Governance and consists of the leadership as well as the organisational structures and processes ensuring that the organisation's IT department sustains and extends the strategies and objectives of the business (Turel & Bart, 2014). ITG, also referred to as the Corporate Governance of IT, is the system by which the current and future use of IT is directed and controlled, and it involves evaluating and directing the use of IT to support the entity (ISO/IEC38500, 2015).

Frank (2017) provides evidence that an understanding of IT Governance is of benefit to informaticians in their day-to-day work since processes are more clearly defined, controls are understood, and auditing is improved. While IT Governance is not data governance, informaticians are often responsible for data governance efforts. Understanding the larger picture of IT Governance can be useful to informaticians, as it provides a solid context and models that can be used or adapted for data governance efforts. IT Governance is critical to the success of IT as a whole, as it helps to ensure that all stakeholders have a voice and appropriate decision-making rights in guiding the IT efforts across the organisation (Frank, 2017).

Implementing and maintaining an IT Governance structure requires commitment from the entity at all levels and requires time and resources for management and implementation (Frank, 2017). This is termed 'Business-IT strategic alignment'. ISACA (2012) adds that this alignment is a harmonisation of the strategic business objectives (intent, current strategy and goals) and the organisation's investment in IT in terms of the value IT delivers to the organisation. The more this harmonisation takes place, the more agreed upon shared context understanding is taking place. Deloitte Consulting (2017) maintains that the key to IT optimisation lies beyond the type used and cost of technology; it also lies in the governance models used to manage and integrate or harmonise IT with the business (Deloitte Consulting, 2017).

Henderson and Venkatraman (1999) provide the Strategic Alignment Model (SAM), defined in terms of four fundamental domains of strategic choice, namely: i) business strategy; ii) Information Technology strategy; iii) organisational

infrastructure; and iv) business processes and Information Technology infrastructure and processes. Each domain has its own underlying dimensions, illustrated by the strategic fit (the interrelationships between external and internal components) and functional integration (integration between business and functional domains). To be more specific, these domains derive four perspectives of alignment with specific implications for guiding management practices, all underpinned by a collective understanding (Henderson & Venkatraman, 1999). This study is further enhanced by an investigation demonstrating the alignment between Business and IT to create alignment within project governance, thereby improving project performance significantly (Sirisomboonsuk et al., 2018).

Ping-Ju Wu, Straub and Liang (2015) show the positive effects of IT Governance mechanisms on organisational performance if it is fully interceded by the strategic alignment between IT and Business. This is substantiated by clarifying that a positive correlation between Business-IT alignment and business performance can only be achieved through a shared understanding of the objectives by both Business and IT. This understanding also takes into consideration the context of all the internal stakeholders of the business.

2.2.4 Audit

An audit is a systematic and independent examination of the organisation's books, accounts, statutory records, documents, and vouchers, to ascertain the extent to which the financial statements and non-financial disclosures present a true and fair view of the concern. It also attempts to ensure that the books of accounts are properly maintained by the concerned as required by law (Power, 1999).

2.2.4.1 Internal Audit

Internal auditing or internal assurance is an independent, objective assurance and consulting activity designed to add value to and improve an organisation's operations. It helps a business or organisation accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes (The Institute of Internal Auditors, 2017).

2.2.4.2 External Audit

In contrast to an internal auditor, an external auditor performs an audit in accordance with specific laws or rules of the financial statements of a company, government entity, other legal entity, or organisation, and is independent of the entity being audited. The objective is to provide and audit report. Users of these

entities' financial information, such as investors, government agencies, and the public, rely on the external auditor to present an unbiased and independent audit report (The Institute of Internal Auditors, 2017).

2.2.4.3 Combined assurance

Combined assurance refers to a co-ordinated (combined) approach applied by both External and Internal Audit in receiving assurance on whether key risks are being managed appropriately within an organisation. The combined assurance model is a commonly accepted view of the risks facing the organisation, thus combined assurance has a risk management foundation and focus (Decaux & Sarens, 2015).

2.2.5 IT Audit

An IT audit, or information systems audit, is part of the larger audit. It is an investigation of the management controls within IT infrastructure, systems and processes (Davis, 2005; Rainer et al., 2014). The evaluation of obtained audit evidence determines if the systems are safeguarding assets, maintaining data integrity, and operating effectively to improve processes and ultimately achieve the organisation's goals or objectives (Davis, 2005). It is an examination of the information system's inputs, outputs, processing, and knowledge about the entity, as the first step in this examination (Rainer Jr. et al., 2014).

IT audit is part of a bigger audit in the form of IT General Controls (ITGCs). ITGCs are non-specific processes, procedures and policies that apply to the whole IT environment, ensuring that IT operation (including access management and development) is adequately functioning and enforcing an error-free operation (Gantz & Maske, 2014).

Part of the ITGC is to support the larger auditing. Auditing cannot be imagined without the involvement of IT specialists, as business processes are designed to be served by IT components such as enterprise resource planning systems, online customer-facing applications, and databases, among others. Auditors who are therefore exposed to IT system and control reliance want to gain reasonable assurance that data and transactions stored in IT systems cannot be modified, that access is controlled, and that there is no suspicion of any fraud within business organisations (Barta, 2018).

Based on a content analysis of annual reports in a field survey on the maturity of the control objectives processes, the results confirmed that the presence of an IT Governance framework stimulates accountability and transparency to external

stakeholders such as auditors. This is particularly applicable to settings where the strategic role of IT is high (ISACA, 2012).

Subsequently, in a study conducted by Joshi et al. (2018a), the authors investigated the relation between the maturity of IT Governance processes and the IT Governance disclosure of firms. Joshi et al. proved a positive correlation between mature IT Governance processes and audit transparency, thereby improving audit value.

2.2.6 The use of technology in IT Audit and Governance

The findings of Omiteso, Patel and Scott (2010) indicate that IT is re-shaping auditors' roles and outputs as well as audit organisations' structures. They also note that there is a strong requirement to use technology to gain a better industry understanding of the organisation using Artificial Intelligence (AI). Historically, one of the causes for the lack of shared CA in IT audits is that technology is not frequently used with the execution of audits (Lowe et al., 2017). Lowe et al. (2017) identify that the planning phase of the auditing processes can be vastly improved by using technology advancements such AI to harvest industry knowledge. Continuous auditing techniques such as AI and COBIT are expected to gain importance in future as long as there is still a need for new audit software to help auditors gain a better understanding of their clients' businesses and to match the complexity of their clients' information systems (Omiteso, Patel & Scott, 2010; Rainer Jr. et al., 2014). COBIT is an acronym for Control Objectives for Information and related Technologies.

2.2.7 Ubiquitous computing

Ubiquitous computing (UBICOMP) can be used to enhance the context awareness of auditing. The computer term 'UBICOMP' designates an era of modern computing in which an entity owns and uses many pervasive means for processing information. Characterised by the anywhere, anytime and anyone-based concepts, UBICOMP is also known as pervasive computing (Sadiku et al., 2018). It refers to computers everywhere surrounding humans, users communicating with each other and interacting with people and environments. It embeds computers into the daily lives of people in ways that render computers unnoticed and be taken for granted; it also contributes to processing power (Sadiku et al., 2018). UBICOMP is changing the paradigm of information systems in that it is founded on the principle of constructing systems that are able to manage fluctuating or changing business environments efficient and effectively (Yousfi et al., 2016). Yousfi et al. (2016) prove that applying ubiquitous computing to business processes will improved the performance of these

processes and potentially enhance the understanding of the context of the processes. This illustrates the benefits of employing UBICOMP from which Artificial Intelligence or Machine Learning (ML) applications could benefit hugely.

2.2.8 Artificial Intelligence and machine learning

AI is the ability of a computing device or machine to exhibit human-like intelligence in contrast to the natural intelligence displayed by humans. The term is often used to describe computers that mimic cognitive functions that humans associate with the human mind, such as learning and problem solving (Russell & Norvig, 2009).

In finding definitions for AI and ML, MacCann (2017) warns that these terms are used loosely and incorrectly within industry. Both AI and ML are used to classify things and predict outcomes based on processing large volumes of data or information. However, AI is the ability of a computing device or machine to exhibit human-like intelligence, for example solving a problem without the use of hand-coded software containing detailed instructions. As for ML, which is considered a subset of AI not to be confused with AI, is the detection, correlation, and "pattern recognition generated through machine-based observation of human operation of software systems along with on-going self-informing algorithms, leading to useful predictive or prescriptive analytics" (MacCann, 2017:7).

To simplify, Hosch (2018) refers to ML as the ability computer systems have to "learn" or ascertain and improve performance with data autonomously, without being explicitly programmed. One of the objectives of this study was to investigate if using UBICOMP techniques and applying ML to IT Audit and Governance could potentially improve context understanding. ML is a technology designed to build intelligent systems. These systems also have the ability to learn from past experience and analyse historical data. It provides results according to experience (Hosch, 2018).

2.2.9 Continuous auditing

Continuous auditing is an automatic method used to perform auditing activities, such as risk and control assessments, on a more frequent and regular basis (ISACA, 2002). Technology in ML techniques can play a key role in continuous audit activities by helping to automate the identification of exceptions or anomalies, analyse patterns within the digits of key numeric fields, review trends, and test controls, among others (Miklos & Chan, 2017). The "continuous" aspect of continuous auditing and reporting refers to the "real-time" or "near real-time" capability for financial information to be verified and shared. Not only does it indicate that the integrity of information can be evaluated at any given point of time, it also

means that the information can be verified constantly for errors, fraud, and inefficiencies (Miklos & Chan, 2017).

The ability to report on events in a real-time or near real-time environment can provide significant benefits to the users of audit reports. Continuous auditing is therefore designed to enable auditors to report on subject matter within a much shorter timeframe than with the traditional model (Shilts, 2017).

The ever-changing digital economy has significantly changed the way business is conducted and how and when financial information is communicated (Rezaee et al., 2018). A rapidly growing number of entities conduct business and publish reports online and in real-time. Real-time financial reporting is likely to necessitate continuous auditing to provide continuous assurance on the quality and credibility of the information presented. The audit process has by necessity evolved from conventional manual auditing to computer-based auditing, and is now confronted with creating continuous electronic audits (Rezaee et al., 2018).

Fast emerging IT and reporting commands timely communication of information to business stakeholders, which requires auditors to invent new ways to monitor, gather and analyse audit evidence continuously. Within this context, continuous auditing is defined here as “a complete electronic audit process that enables auditors to provide some degree of assurance on continuous information basis, concurrently with, or shortly after, the disclosure of the information” (Rezaee et al., 2018:170). Most of the new techniques that will be required in future audits involve the creation of new software and audit models (Byrnes et al., 2018). Future research should focus on how continuous auditing could be improved constantly in various auditing domains, including assurance, attestation, and audit services (Byrnes et al., 2018).

If one endeavours to apply UBICOMP to create a “smart or computerised” and continuous audit ML system, it must be characterised by the high dynamism of the entities and objects living within this space. According Piccialli and Chianese (2017), context changes or evolve over time, and this should be managed. The authors state that it is very important to formalise a structure to address this issue and consequently design a suitable solution to create context-aware IT systems (Piccialli & Chianese, 2017).

In a study conducted in Taiwan, the results of Chi and Myers (2017) suggest that an audit partner’s pre-client experience, together with the accumulated experience from

having other clients, appears to enhance both real and perceived audit quality. This industry experience lays the foundation for an easier client-context.

In 2017, AI advocates predicted that the time would come for AI systems to be capable of auditing all the financial transactions of a company (Brennan, Baccala & Flynn, 2017). These visionaries foresaw the day when AI would enable auditing as a continuous and real-time process, not a prolonged exercise requiring large teams of accountants working overtime after the close of the fiscal year. Brennan, Baccala and Flynn (2017) argue that auditing, specifically IT auditing control checking, is a perfect application for AI, as, compared to humans, machines excel at performing repetitive and time-consuming tasks such as data acquisition and auditing (Brennan, Baccala & Flynn, 2017). AI systems can assist auditors by acquiring, processing, and churning through the large volumes of information that the business's financial reporting systems generate in order to create context for all (Brennan, Baccala & Flynn, 2017). Using these systems has many benefits, but most importantly, efficient processing means costs savings. With AI systems, the entity will devote less time and resources responding to audit queries and requests for documentation, leading to more time on hand for critical, deadline-driven periods. More important, when external auditors have more time to spend on higher-level analysis, they can focus on areas that require increased judgment and display an elevated level of estimation uncertainty (Dickey, Blanke & Seaton, 2019). The big four public accounting firms – PwC, KPMG, Deloitte and Ernst & Young – have also recognised that AI can be a useful supporting tool in financial auditing; they began adapting their solutions and made agreements with larger technology companies purchasing their intelligence products (Barta, 2018).

AI seems to have tools to solve the problems faced by auditors and create improved context and business understanding. AI is a scientific area that aims to empower computers with human thinking and problem-solving capabilities (Barta, 2018). Barta (2018) supports the use of machine learning in auditing, as information systems produce a large amount of log files that cannot always be processed manually because of the limit of human capacity, but automated solutions can be developed using machine learning to assist organisations with detecting any anomaly in time.

2.3 Summary

In Chapter Two, literature related to the study at hand were discussed, as no or a limited stakeholder understanding of a business's context of an IT audit could have various implications on the outcome, duration and cost of the audit, which could lead to unfounded IT audit findings.

Concepts such as context, CA, the shared understanding of context, IT Governance, the different sub-concepts of audit, the use of technology in Audit and Governance, ubiquitous computing, and continuous auditing were discussed.

From the above concepts, it would appear that a “shared understanding” and thus “context” is an important consideration during IT audits. A further review of the literature shows that concepts such as UBICOMP, AI, ML techniques, and applications could assist in creating this context understanding among the stakeholders to ultimately improve business process understanding.

The research methodology is discussed in Chapter Three.

CHAPTER THREE: RESEARCH METHODOLOGY

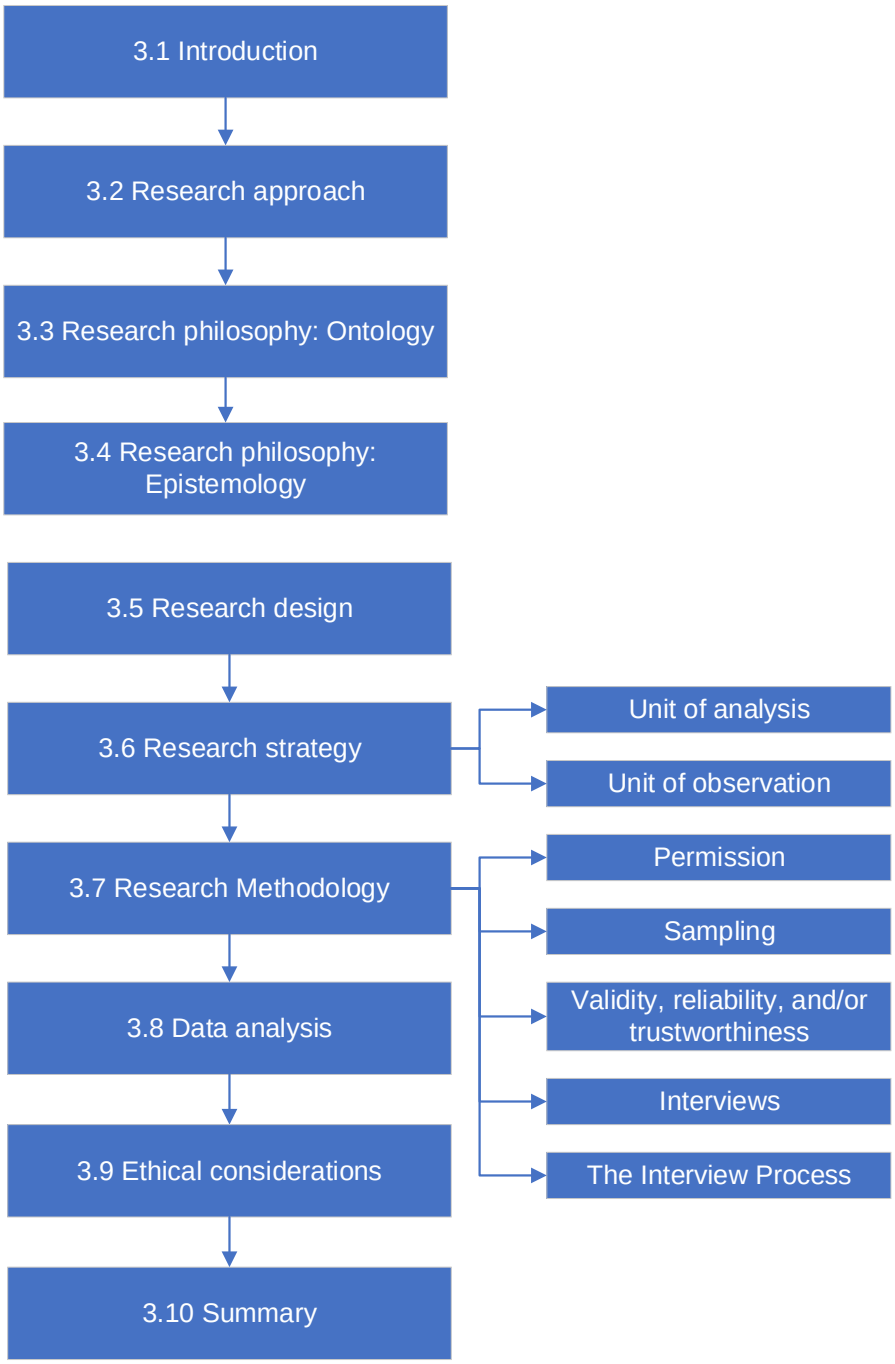


Figure 3.1: The flow for Chapter Three

3.1 Introduction

The previous chapter focused on the literature related to the research. This chapter introduces the research methodology suitable for the study. The methodology is formulated in accordance with the research problem and questions. The chapter covers the research design, setting, sampling criteria, research techniques used for the data collection, and the analysis. The chapter concludes with ethical considerations.

3.2 Research approach

The qualitative research approach assists researchers in gaining an understanding of the subjective experience of specific individuals or groups (Cua & Theivananthampillai, 2009). Qualitative research is reliable due to the validity, meaning, and closeness to the truth (Chenail, 1995). The inductive research approach begins with specific data from which more general ideas or theories are generated. This study adopted a qualitative, inductive research approach, considered exploratory and bottom-up (inductive) (Woo, O'Boyle & Spector, 2017).

3.3 Research philosophy: Ontology

Ontology can be defined as “an explicit specification of a conceptualisation” (Moreira et al., 2008:154) or “the study of the kinds of things that exist” (Chandrasekaran, Josephson & Benjamins, 1999:20). Neuman (2010) identifies two ontology positions: realist and nominalist. Realists (objective ontology) assume that the “real world” is not dependent on humans and their understanding thereof in order to exist (Neuman, 2010:92). Nominalists (subjective ontology) assume that humans have their own view of reality. For this study, a subjective ontological stance was followed as the researcher saw himself within the real world and was part of the case used for the study (Saunders, Lewis & Thornhill, 2019).

3.4 Research philosophy: Epistemology

Neuman (2010:93) described epistemology as “the issue of how we know the world around us or what makes a claim about it true”. Saunders, Lewis and Thornhill (2019) recognise three epistemology approaches: positivism that adopts a realist position, interpretivism or phenomenology that explains there are multiple ways of looking at things, and the critical theory tradition that is a combination of positivism and interpretivism. This research adopted an interpretivist epistemological stance, as the researcher interpreted the data collected from the interviewees to make claims about the truth (Saunders, Lewis & Thornhill, 2019).

3.5 Research design

The research design is the logical sequence that connects the empirical data to the research questions (Watkins, 2010). This action plan or design was followed to collect the data needed to understand the value of similar context understanding as well as the different perceptions of the stakeholders in IT Audit and Governance, and to explore what could be done to improve context understanding. Thus, an explorative research design was adopted due to the ability of providing first-hand information about the experiences, and the perception differences and challenges regarding audits, IT audits, and IT Governance work.

3.6 Research strategy

To answer the RQs and RSQs, a case study research strategy was followed using a South African based international company referred to as the Group (see Glossary of Terms; section 4.2).

Case studies can be seen as one of many ways of conducting research (Yin, 2006) and is used to answer “why” and “how” research questions (Phelan, 2011). According to Hyland (2016), case studies are used to achieve a better understanding of a person, process, event, or group. Yin (2011) as well as Baxter and Jack (2008) elaborate that that case studies should be used when researchers want to cover contextual conditions of a phenomenon that is being studied. These authors recommend that a case study be used when the researcher conducts research to answer “how” and “why” questions and the researcher has no influence on the answers or behaviour of the participants. Several types of case studies can be identified in literature, including explanatory, exploratory, descriptive, multiple-case, intrinsic, instrumental, and collective studies (Baxter & Jack, 2008; Phelan, 2011). Case studies can be used for qualitative and quantitative studies or both. It can be inductive or deductive, depending on how it is used by the researcher (Gerring, 2007; Phelan, 2011; Yin, 2011). Phelan (2011) identifies six sources of data or information when conducting case studies. These sources include company documents such as letters and reports; interviews; direct observations of participants/units; participant observations, for example being part of the process; physical artefacts; and revisiting archived records. One potential disadvantage related to case studies is that it usually takes time and the researcher can end up with many documents. A multiple case study (11 companies) strategy was followed for this research.

3.6.1 Unit of analysis

Phelan (2011) describes the unit of analysis as the source from where the researcher obtains the required information to answer the research questions, while Bengsston (2016) describes it as the sample used to conduct the research, and what the researcher is seeking to reveal through the study. For this research, the unit of analysis was the Group of companies. As such, 18 non-random individuals from 11 different companies were identified within the divisions of the Group. Research was conducted with companies from the following industries:

i. Automotive
ii. Commercial Products
iii. Electrical Services

iv. Financial Services
v. Freight-Transport
vi. Office Supplies & Print
vii. General Services

3.6.2 Unit of observation

The unit of observation is non-random, purposively and conveniently selected and consisted of individual participants from the stakeholders within IT Audit and Governance. The unit of observation was composed of the following stakeholders:

i. **Management and Finance stakeholder:** Chief Executive/Financial Officers (CEOs and CFOs) – familiar with perceptions of IT Audit and Governance from a business perspective
ii. **Audit and Risk stakeholder:** Audit Executives and Audit/Risk Managers – familiar with perceptions of IT Audit and Governance from an audit perspective
iii. **IT stakeholder:** Chief Financial/Information Officers/IT Managers (CFOs and CIOs) – familiar with perceptions of IT Audit and Governance from an IT department perspective

3.7 Data collection

Neuman (2010) identifies several methods to collect data, including the review of existing documents, observations, interviews, and semi-structured questionnaires. For this investigation, data collection was done by means of interviews using semi-structured questionnaires with an interview guide (Appendix C). This method provides rich phenomenological data and enables in-depth tracing of the hands-on experience of employees (Henning, Van Rensburg & Smit, 2004).

3.7.1 Sampling

For this research, a non-probability, purposive and conveniently selected sample of eighteen (18) participants was chosen. According to Bengsston (2016), the sample size should be determined based on the informational needs so that the research question can be answered with sufficient confidence. This type of research must also be based on the theory of non-probability sampling, because it is almost impossible to determine who the entire population is, and it is as impossible to gain access to the entire population (Bengsston, 2016).

3.7.2 Permission

Permission to conduct the study was granted by the Management of the Group (Appendix A). Consent for conducting individual interviews was obtained from the

participants before each the interview. Permission was also asked to record the interview.

3.7.3 Validity, reliability, and/or trustworthiness

None of the research processes, whether it is identifying the research problem, research aims, literature review, sample collection or data analysis, have any merit if the design and research methods of data collection are not reliable and valid (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014). Although the concepts of validity and reliability are more commonly used in quantitative research, it is just as important in qualitative research. Qualitative research however does not use the same terminology, but refers to it as trustworthiness consisting of four dimensions, namely credibility, transferability, dependability, and confirmability (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014).

This research adopted the qualitative research methodology and therefore used the concepts of trustworthiness. According to Lincoln and Guba (1985:8), trustworthiness comprises the following:

i. **Credibility:** The researcher needs to spend time to interpret the data accurately.
ii. **Transferability:** This concept refers to the ability to apply the findings to similar situations with similar results.
iii. **Dependability:** The researcher needs to ensure the quality level of the data collection and data analysis processes.
iv. **Confirmability:** The researcher needs to ensure that the data collection supports the required findings and interpretation.

All the interviews were transcribed and returned to the participants, as they had to confirm the correctness of their transcriptions and the intent of their answers. The data analysis of a transcript only commenced after a participant approved the transcript.

3.7.4 Interviews

The interview is an appropriate data collection method, as it is a qualitative research technique used on a small number of participants to explore their viewpoints and perceptions of the other stakeholders, or of a particular subject and situation (Boyce & Neale, 2006). The individual interviews took approximately 60–80 minutes to complete. The transcriptions of all 18 participants were captured accurately and ethically from the recordings made during the interviews (Appendix E1 – E18).

3.7.5 The interview process

The semi-structured questions (Interview guide, Appendix C) were derived from the research sub-questions. In answering the Individual Questions (IQs), the RSQs were answered; in turn, the research questions were answered, which meant the research problem was successfully addressed. The appointments were individually arranged with each participant after an information mail was sent by the Group Executive or sponsor of the research.

All participants were formally informed by research letter, and again verbally at the interview, regarding the contents, purpose, and context of the research study. This included full permission and consent to record the interview and taking notes as reference for later use, exclusively for the study. The interview guide was used to guide the researcher during the interview, and additional questions were posed as and when needed to gain insights and clarity (Appendix C). All interviews were transcribed and mailed electronically to the participants for validation and correctness, and verification of correctness was obtained. See Appendix D for an example of a validation mail.

3.8 Data analysis

Neuman (2010) identifies two data analytical techniques, known as qualitative and quantitative data analysis. This research made use of qualitative data analysis techniques. Once the data collection process was completed, the interviews were transcribed and presented to the participants for the correctness of the transcriptions in order to determine the validity of these transcriptions.

From the transcriptions, key words and key concepts were identified. These were then summarised, organised, and categorised (Appendix F). The summarised and categorised data were then further put through a thematic analysis process. This process was done as illustrated in Table 4.5.

3.9 Ethical considerations

Resnik (2015:1) defines ethics as “norms for conduct that distinguish between acceptable and unacceptable behaviour”. According to Resnik (2015), ethical norms are learned at home, school, church, or any other social environment. Throughout the research process, the researcher adhered to the ethical norms act with integrity, and to the required and recommended ethical principles essential for this research (Bryman, 2012). Du Plooy-Cilliers, Davis and Bezuidenhout (2014) posit that several important ethical issues affect the participants in research.

These include:

i. **Informed consent:** The researcher informed the participants of the study and obtained their consent for participation.

ii. **Collecting data from the participants:** The researcher prioritised the participants' physical and psychological comfort, and acted appropriately and ethical.

iii. **Dealing with sensitive information:** The researcher dealt appropriately with sensitive information.

iv. **Provide incentives and validity:** The researcher did not bribe any participant and shared the findings of the research with the participants.

v. **Avoiding deception:** The researcher ensured that there was no deception while collecting or analysing the data.

vi. **Autonomy:** No participant was embarrassed or ridiculed in any way by taking part in the study.

vii. **Beneficence:** This means that if applicable, vulnerable participants are provided additional protection and the risks of the research compare favourable to the benefits (Cua & Theivananthampillai, 2009). The study did not involve vulnerable groups, but the researcher was and is aware of the rights of vulnerable participants and the actions to be taken in preparation of involving these individuals or groups.

viii. **Non-malfeasance:** In this study, there was not anticipated harm to the psychological status of the participants, but the researcher took note of the issue.

ix. **Justice:** The participants' rights were (and still are) taken into consideration. Each participant was treated equally. This includes the rights of the participant to be informed about the study, to decide whether to participate in the study, and to withdraw at any time during the study without penalty or prejudice (Appendix B).

x. **Confidentiality:** According to Watkins (2010), it is good practice to offer and provide confidentiality, as participants provide more open and honest responses during interviews. In addition, informing the participants on what will to happen to their information and ensuring that their feedback is purely for research proposes is of the utmost importance. Maintaining participant and study confidentiality was and still is important for the researcher. For this study, unauthorised persons did not and will not have access to the personal information of the respondents in any way or form. Only the researcher and the supervisor had access to the information for the duration of the study. The interview recordings and any form thereof have been submitted to

CPUT's postgraduate data storage section and will be disposed of after a predefined period.

xi. **Honesty:** The risk of the study's results being misleading has been minimised as much as possible, as the researcher reported and accurately transcribed the interviews in full and reported the findings in full, with honesty and without bias (Watkins, 2010). The researcher acknowledged the scientific and professional contributions accurately and maintained objectivity and integrity at all times throughout the duration of the study and beyond.

The researcher has ensured ethical research conduct as defined by du Plooy-Cilliers, Davis and Bezuidenhout (2014:8), which includes an ethical code of conduct, learning from other researchers, and the continuation of learning in terms of (the):

i. Research approach (qualitative)
ii. Ethical consideration with regard to the research methods (case study, survey, focus group interviews)
iii. Units or levels of analysis
iv. Sampling technique (if a quantitative design is used) or motivation for choosing cases or subjects to be interviewed (if a qualitative design is used)
v. Sample size (in the case of a quantitative design) or a motivation for the number of cases or interviews (in the case of a qualitative design)
vi. Data analysis methods

3.10 Summary

The study has adopted and inductive research approach with a subjectivist ontological stance and an interpretivist epistemological stance as philosophical view. The research design was explorative and the research strategy was a case study. Interviews were conducted with 18 purposively selected Senior to Middle Management personnel. Thus, the unit of observation was non-randomly, purposively and conveniently selected participants from all the stakeholder groups involved in IT Audit and Governance.

The data collection was preceded by obtaining permission from the organisation to interview employees and participants. The interviews were preceded by a formal explanation of the process and accompanied by the respondents' full consent, understanding, and willingness to participate while the researcher took notes and recorded the interviews. The data were collected using semi-structured interviews with consideration for validity, reliability and all forms of considered ethics.

The data analysis was conducted by transcribing the interviews and validating the transcriptions. Thereafter, key words and concepts were identified, summarised, and categorised, and a thematic analysis was executed.

The next Chapter (Four) elaborates on the results of the analysis and findings.

CHAPTER FOUR: ANALYSIS AND FINDINGS

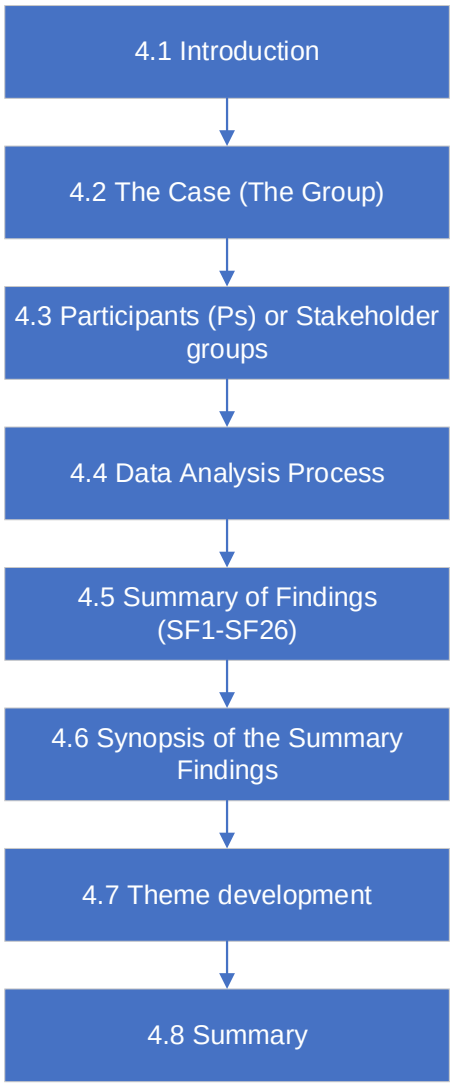


Figure 4.1: The flow for Chapter Four

4.1 Introduction

Chapter Four covers the analysis, results, and findings of the study in detail as conducted and derived by the researcher. This chapter (Figure 4.1) specifies how and from whom the data were collected and how this data were prepared for the analysis and findings. Feedback is provided on the research results in an attempt to achieve the aim of the study, namely to explore the value of context awareness within IT Audit and Governance in order to identify the value of shared context understanding. The chapter commences with presenting the case (the Group) as well as the Group's audit system called ALICE.

The participant representation of the three (3) stakeholders involved in IT Audit and Governance is illustrated in Figure 4.2 and Table 4.1.

From the data analysis, 154 common and standout findings (Appendix F) were further reviewed to present 26 summary findings (SFs) (Figure 4.4) addressing the RSQs. The SFs are presented in accordance with the RSQs to address these questions directly.

4.2 The Case ("The Group")

The case study selected offers a diverse group of companies with vast experience in the South African Services, Trading, and Distribution sector. "The Group" was founded in 1988 and listed on the Johannesburg Stock Exchange in 1990. The Group owns or has significant holdings in over 300 companies and comprises a diverse company structure, thereby making it ideal for the study. The Group has a corporate office in Johannesburg, South Africa, and employs approximately 137,000 people. The divisions of companies where the research was conducted include Automotive, Commercial Products, Electrical, Financial, Freight-Transport, Office Supplies & Print, and General Services.

The Group developed an automated audit system called ALICE, which is an AI Audit System or 'audit-bot' currently in the early development phase. The Group's Advisory Services developed the system, which has been providing 'audit-as-a-service' on IT systems and services for the Group since December 2016. ALICE orchestrates the automated (and/or manual, where applicable) collection, storage, analysis and reporting of IT environmental (or general) controls and information security data against various best practice standards, through settings that are configured by experienced IT auditors and ML. This is based on the risk profile of specific ALICE audits. The ultimate goal is for ALICE to be the total audit tool to consolidate not only IT audit controls or ITGCs for the Group, but to also all financial controls and risks.

Within the Group, eighteen (18) interviews were conducted at eleven (11) different companies representing all the divisions of the Group.

4.3 Participants or stakeholder groups

Three groups of participants (Ps) were interviewed from the three stakeholders identified within IT Audit and Governance, namely: i) Audit and Risk; ii) Management and Finance; and iii) the IT stakeholders. Figure 4.2 and Table 4.1 illustrate the division percentage of the stakeholder groups as well as the participant representation within these groups. Six (4) participants were from Audit and Risk, four (4) from Management and Finance, and eight (8) from IT. Participants were

from Middle and Senior Management, with a minimum of 5 years' experience in the Group.

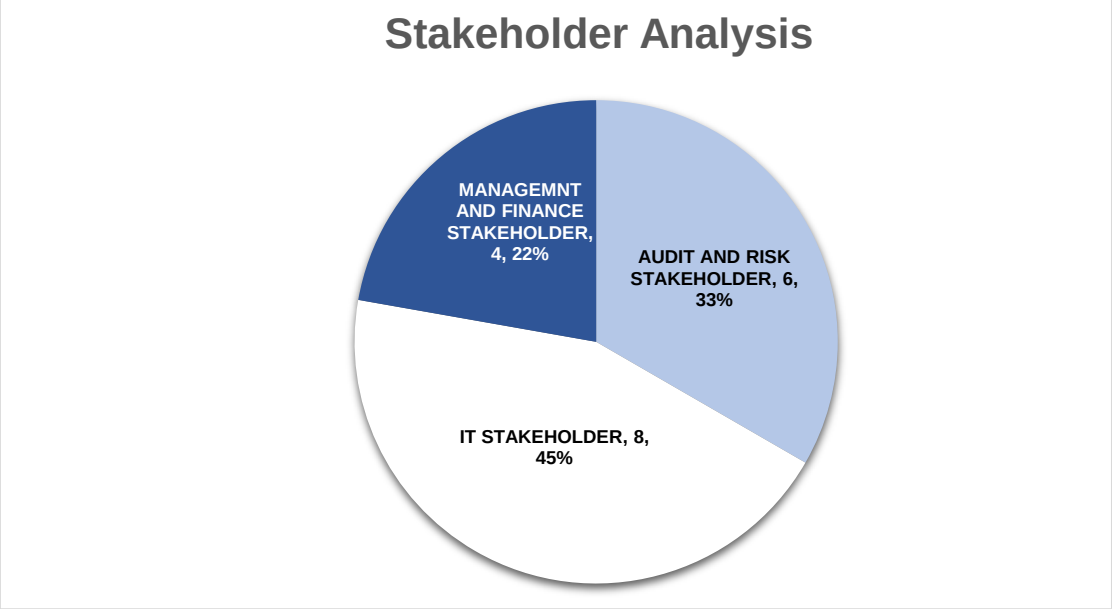


Figure 4.2: Stakeholder analysis

Table 4.1: Stakeholder analysis

	Total	%	Participant No.							
Audit and Risk stakeholders	6	33%	1	5	7	13	16	18		
IT stakeholders	8	44%	2	3	8	9	10	11	12	14
Management and Finance stakeholders	4	22%	4	6	15	17				

Table 4.2 illustrates the participants' standing within the Group or individual companies in terms of their titles in the company/Group and years of experience.

Table 4.2: Stakeholder analysis (titles and experience)

Participant	Stakeholder Group	Title at Company / Group Level	Experience
P1	Audit and Risk stakeholder	Audit Manager (Company)	10 years
P2	IT stakeholder	Chief Information Officer (Company)	20 years
P3	IT stakeholder	Chief Information Officer (Company)	20 years
P4	Management and Finance stakeholder	Finance Manager (Group Level)	15 years
P5	Audit and Risk stakeholder	Chairman of the Audit Committee (Group Level)	50 years
P6	Management and Finance stakeholder	Chief Financial Officer (Company)	25 years
P7	Audit and Risk stakeholder	Chairman of the Risk Committee (Group Level)	30 years

Participant	Stakeholder Group	Title at Company / Group Level	Experience
P8	IT stakeholder	Chief Information Officer (Company)	30 years
P9	IT stakeholder	IT Manager (Group Level)	10 years
P10	IT stakeholder	Chief Information Officer (Company)	25 years
P11	IT stakeholder	Chief Information Officer (Company)	25 years
P12	IT stakeholder	Chief Information Officer (Company)	20 years
P13	Audit and Risk stakeholder	Risk Manager (Company)	15 years
P14	IT stakeholder	Chief Information Officer (Company)	15 years
P15	Management and Finance stakeholder	Chief Financial Officer (Company)	30 years
P16	Audit and Risk stakeholder	External Audit Executive (Group)	25 years
P17	Management and Finance stakeholder	Chief Financial Officer (Company)	30 years
P18	Audit and Risk stakeholder	Internal Audit Executive (Group)	30 years

4.4 Data analysis process

Table 4.3 shows the RQs, RSQs, and IQs again for the ease of the reader. The interview questions were derived from the RSQs as discussed in the methodology.

Table 4.3: RQs, RSQs, and IQs

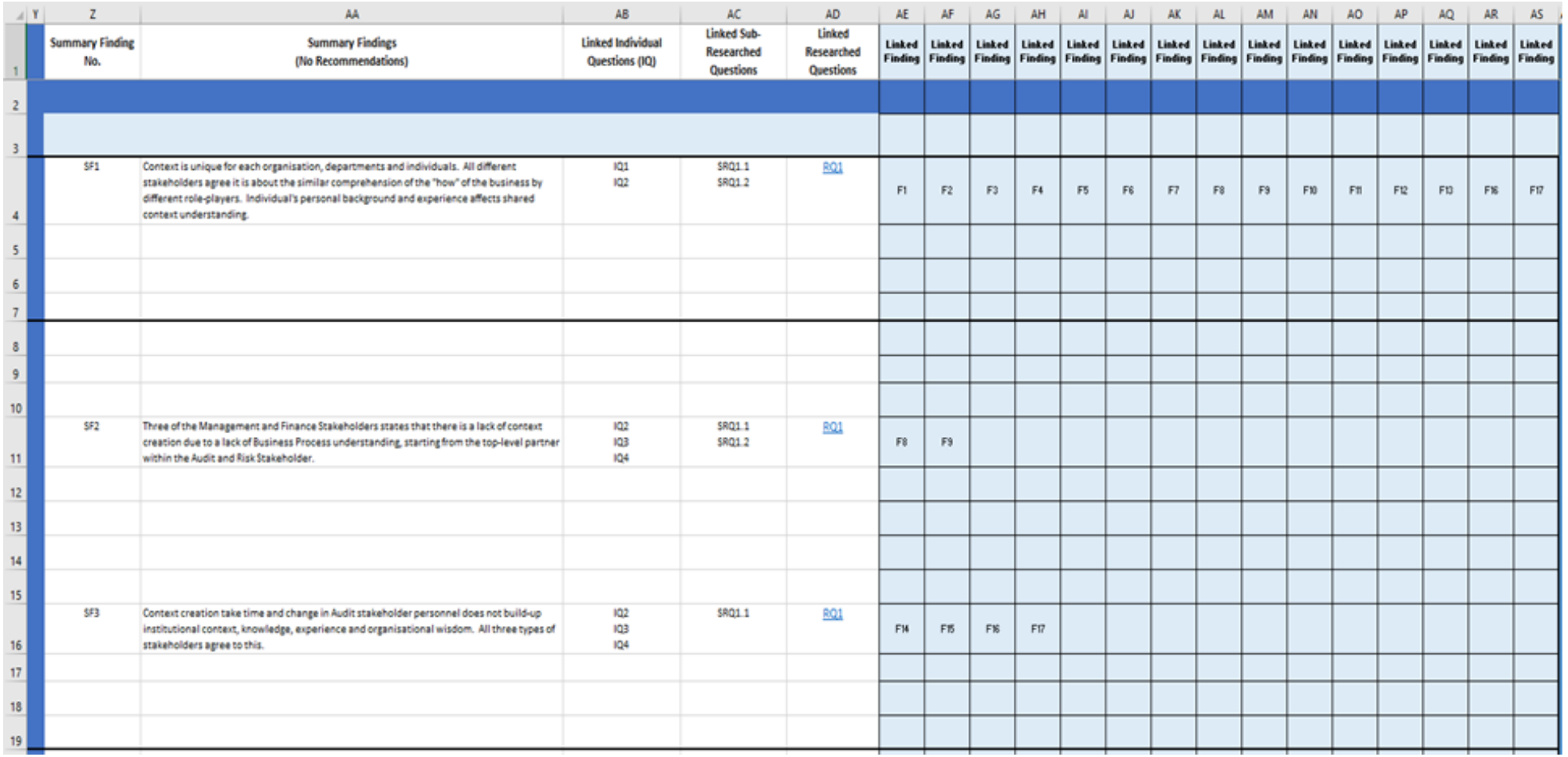
No.	RSQ/RSQ No.	Questions
1	**RQ1**	**What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?**
1.1	**RSQ 1.1**	**What constitute shared context awareness and IT-Business alignment in IT Audit and Governance?**
1.1.1	IQ1	How would you describe the term ‘context’ within your business environment?
1.1.2	IQ2	What does the term ‘shared context understanding’ mean to you when conducting IT audits?
1.1.3	IQ3	How important is an understanding of the business to you?
1.1.4	IQ4	What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?
1.1.5	IQ5	What would you define as IT-Business alignment and why would you think it is important?
1.2	**RSQ 1.2**	**What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?**
1.2.1	IQ6	In your opinion, what are the challenges that break down a shared understanding?
1.2.2	IQ7	In your opinion, how can these challenges be overcome to create a common or shared understanding?
1.3	**RSQ 1.3**	**What are the different perceptions within IT Audit and Governance?**
1.3.1	IQ8	Do you think different perceptions exist within IT Audit and Governance? If yes, what perceptions, and why would those perceptions differ? If no, why do you think there would not be a difference in perception?

No.	RSQ/RSQ No.	Questions
1.3.2	IQ9	In your opinion, what creates different perceptions in your company or department when conducting audits?
2	**RQ2**	**How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?**
2.1	**RSQ 2.1**	**How do stakeholders interact when conducting IT audits and implementing IT Governance?**
2.1.1	IQ10	How and when do the three stakeholders (IT, Audit, Business) interact?
2.1.2	IQ11	In your opinion, what can be done to improve the interaction between these stakeholders?
2.2	**RSQ 2.2**	**How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?**
2.2.1	IQ12	How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?
2.2.2	IQ13	What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?
2.2.3	IQ14	What do you think are the perceptions of your Business stakeholder and how do you shape this perception?
2.2.4	IQ15	What do you think are the perceptions of your IT stakeholder and how do you shape this perception?
2.3	**RSQ 2.3**	**How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?**
2.3.1	IQ16	In what ways can a system such as ALICE understand the context of an entity better?
2.3.2	IQ17	What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?
2.3.3	IQ18	What insights would be beneficial from a ‘context understood’ ALICE audit report?
2.3.4	IQ19	In your opinion, what would you rate as the most important context ALICE could have?
2.3.5	IQ20	In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?
2.3.6	IQ21	Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?
2.3.7	IQ22	Are there any specific context data that you would like ALICE to consider when contextualising risk?
2.3.8	IQ23	Would you prefer ALICE to describe the context, the metric of the context, or both?

The interviews were transcribed verbatim from the approved recordings. Thereafter, the transcriptions were read and re-read to gain an understanding of the meaning and context of the participants’ responses, leading to the coding process. Figure 4.3 shows the Microsoft Excel spreadsheet that was used to input the analysis made on the transcriptions.

	A	B	C	D	E	F	
1	No.	RSQ/SRSQ No.	Questions	Participant 1	Participant 2	Participant 3	
2			Stakeholder Category	AUDIT AND RISK STAKEHOLDER	IT STAKEHOLDER	IT STAKEHOLDER	
4			Date of Interview	11/10/2018	16/10/2018	18-10-2018	
5	1	RQ1	What are the factors that affect share context understanding of the stakeholders when conducting IT audits and governance?				
6	1.1	SRQ 1.1	What constitute shared context awareness and IT-Business Alignment within IT Audit and Governance?				
7	1.1.1	IQ1	How would you describe the term "context" within your business environment?	The context within this business can be described as the nature of the business within my role. What we do and how we do it. This includes the operations of the business. Understanding the nature of the business' operations is important for context.	For me context would be an understanding of our business model. How do we as a business make money, and how do we deliver a service. This will stem further an understanding of because of this business model this or that will be done in a certain way. How IT is done because of the business model and within the business.	The breath and scope of the IT landscape within the understanding of the business how. It's about "operationalising" IT risks within the business. The context of this business is a wholesale and retail business, the owner of some brands and agents for others, the ability to innovate on some brands and others not. It is the understanding of the type of business, the context of the business risks in a given point in time and the context of personalities within the business. The real context is also the insights information could potentially provide to enhance sales understanding and analysis for the business.	In n unc the acc frau It's wit bus unc wit Cor and
8	1.1.2	IQ2	What does the term "shared context" understanding mean to you when doing IT Audits?	"A similar understanding of the business, its operations and risks, it includes all aspects of the business".	It's an understanding where the business is coming from in order for them to have the same understanding how that is impacted and implemented. Its an true understanding where the other parties are coming from and why it is asked or checked. It's a sense of the "why". The shared context can be different levels and it's about understanding the why in the context of the other party.	Summarised as: "Is there an agreement of minds, between the three stakeholders (Business, Audit and IT) when it comes to IT Audit and Governance implementations?" There is alignment between IT and Audit but not business. This is due to business not always comprehending the true impact and risks relating to information technology and information security. External Audit is only a sample view with a limited financial scope and not the spectrum of IT risks comprehension.	Unc •Th •Int •Di •Bu
	1.1.3	IQ3	How important is understanding the business for you?	It is 100% important and it is core to identify risks. "One cannot identify risks if one does not understand all aspects of the business. Not formal, but a lot of time is spent on understanding the business".	Very important, if IT does not understand the business and the requirement, how is IT going to deliver on that requirement. This means misalignment if the context of the business is not understood. Understanding the business is important because it enables a comprehension of the priorities of the business, people, stakeholders and customers.	Very important and crucial without a doubt.	Ver ide

Figure 4.3: Response datasheet



Summary Finding No.	Summary Findings (No Recommendations)	Linked Individual Questions (IQ)	Linked Sub-Researched Questions	Linked Researched Questions	Linked Finding	Linked Finding	Linked Finding	Linked Finding	Linked Finding	Linked Finding	Linked Finding	Linked Finding	Linked Finding	Linked Finding	Linked Finding	Linked Finding	Linked Finding	Linked Finding	Linked Finding
SF1	Context is unique for each organisation, departments and individuals. All different stakeholders agree it is about the similar comprehension of the "how" of the business by different role-players. Individual's personal background and experience affects shared context understanding.	IQ1 IQ2	SRQ1.1 SRQ1.2	RQ1	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F16	F17
SF2	Three of the Management and Finance Stakeholders states that there is a lack of context creation due to a lack of Business Process understanding, starting from the top-level partner within the Audit and Risk Stakeholder.	IQ2 IQ3 IQ4	SRQ1.1 SRQ1.2	RQ1	F8	F9													
SF3	Context creation take time and change in Audit stakeholder personnel does not build-up institutional context, knowledge, experience and organisational wisdom. All three types of stakeholders agree to this.	IQ2 IQ3 IQ4	SRQ1.1	RQ1	F14	F15	F16	F17											

Figure 4.4: Summary findings (SF) linked to the 154 findings

Next, commonalities in the responses were identified. In total, 154 findings (F1-F154), also known as standout and common responses, were derived from the participants (Appendix F). These 154 findings were analysed and reduced to 26 summary findings (SF1-SF26). Figure 4.4 shows an extract of the summary findings linked to the IQs, RSQs, and RQs.

The summary findings are discussed next.

4.5 Summary of findings (SF1-SF26)

In order to discuss the summary findings effectively, the RSQ is indicated first, where after the related IQs are stated together with the responses as summarised in the 26 SFs. Answers from the 18 participants supporting each SF corresponds with Appendices E1-E18 and linked accordingly.

RSQ 1.1: What constitute shared context awareness and IT-Business alignment in IT Audit and Governance?

Individual Question 1 (IQ1): *How would you describe the term 'context' within your business environment?*

Summary Finding 1 (SF1): Context is unique for each organisation, department, and individual. All stakeholders agree that it refers to a similar comprehension of the "how" of the business by the various role-players. Context understanding is affected down to an individual's personal background and experience.

Thirteen (13) of the 18 participants indicated that business context refers to the "what" and "how" of the business, and how everything fits together for the business to make money. Context can be described as the situation that the business finds itself in, what drives the profits, and how the strategic objectives are achieved. Context within a business, among its business units, and even between various departments is unique and therefore different. Context understanding accumulates or grows through obtaining business experience, historically and current. The personal background of a person determines is/her understanding of the business context (P14, P16, P18: Appendix F). Context is the breath of the internal and external factors that influence the business situation (P3, P5, P13, P18: Appendix F).

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

SF2: Stakeholders agree that there is inadequate context creation due to a lack of business process understanding, starting at the top-level partner within the Audit and Risk stakeholder.

Senior Management does not understand the business process, and this leads to the lack of shared context understanding (P6, P15, P17, P18).

Shared context understanding is a true understanding of where the other parties are coming from, and why (P2, P4, P5, P6, P7, P9: Appendix F). "A true shared context understanding answers the why questions before they are asked" (P9: Appendix E9). "A shared understanding… is total comprehension of the situation of the business at audit partner or top level. If this is the case, the direction of an audit will then be steered in the right direction and add business value" (Appendix E6). Thus, shared context understanding should be created at the most senior level (P6, P15, P17: Appendix F). It is an understanding of the controls practically within the business and the application of these controls in the way that the entity conducts its business (P8: Appendix F).

SF3: All stakeholders agree that context creation takes time, and changes in personnel do not build institutional context, knowledge, experience, and organisational wisdom.

Context understanding takes time and is built over a period of time and with many audits (P9, P15: Appendix F). Shared context is having a different perspective but the same understanding. It refers to viewing the same situation from different viewpoints in the same way by different people (P1, P2, P11, P12, P13, P15, P16, P18: Appendix F). P18 stated that the "three stakeholders… need to understand the same context in the same way, but their output needs to be different" (Appendix E18).

IQ3: *How important is an understanding of the business to you?*

SF4: All stakeholders agree that business understanding is crucial to create synergies in priorities and risk management and is becoming increasingly important.

Seventeen (17) of the 18 participants agreed that understanding the business is important because it enables a comprehension of the priorities of the business, people, stakeholders and customers. Similar understanding of the business is very

important, crucial for implementation, and critical for risk management (P1, P4, P9, P16: Appendix F).

Business process discussions with business must be encouraged at all levels of IT and IT staff. Understanding the business and business processes personally creates value for the business and all stakeholders (P7, P8, P16). Context and business understanding are becoming more important in a growing diverse business environment. P7 said the following: “Critical, especially the understanding of the business regulatory environment, the channels to market, and how those channels are processed” (Appendix E7).

P2 stated:

> Very important, if IT does not understand the business and the requirement, how is IT going to deliver on that requirement? This means misalignment if the context of the business is not understood. Understanding the business is important because it enables a comprehension of the priorities of the business, people, stakeholders, and customers (Appendix E2).

P16 affirmed:

> Absolutely critical for any audit engagements and implementation. Not only the business as such, but even more the processes and the context around the processes. How can you audit without truly understanding the entire business strategy? Within audit implementations we drive the mapping of risks, be it financial or IT implicated risks within the documentation of the process flows (Appendix E16).

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

SF5: The following factors contribute to improving context understanding:

- Increase in quality time allocated to the business processes
- Understanding business risks in the same way
- Constant and consistent communication
- Business-IT alignment
- The Management and Finance stakeholder group highlights especially experience and communication as two factors contributing to improving shared context understanding

A factor that could contribute to improved understanding is time investment by both Audit and Management (business), as stated by P1, P2, P3, P11 and P18 (Appendix F). Half of the participants (P1, P4, P5, P6, P8, P10, P12, P13, P18) agreed that

constant and consistent communication and feedback could improve audit implementations, and importantly, communicating in a language that resonates with Management. Further to sharing the goals, understanding and living the business processes in detail contributes to this context understanding (Appendix F). True business process and risk understanding contributes to context understanding (P6, P8, P11, P16). P18 said that, “Seeing one common collective risk to the business is the key. One version of the fact in order to apply multiple lenses, but at least the entire business is working off the same facts” (Appendix E18).

P7 stated:

> Work reliance of the other stakeholder. Internal Audit is intimately involved with the assessment of the risks and controls and where possible we get ISAE 3402 (International Standard on Assurance Engagements), service organisations, outsourced service providers and brokers. External Audit relies on internal audit work and (ISAE) work done by auditors of the outsourced service provider (Appendix E7).

P9 mentioned that, “Tools or a system like ALICE to provide visibility to all the procedures, people and systems. Visibility is the most common factor. Visibility to see financial controls, technology and system controls and risk mitigations actions and tracking on one single pane of glass” (Appendix E9).

P18 said:

> One common version of the truth. Management has a certain view of the business, auditors have a universe of risks and IT is usually fighting fires. Seeing one common collective risk to the business is the key. One version of the fact in order to apply multiple lenses, but at least the entire business is working off the same facts. Audit normally does not communicate in a language that resonates with Management. The presentation of the findings and the way in which findings is presented make a world of a difference. The visualisation of findings to date has been lacking. The communication protocol between Audit (internal and external) should be more constant, more real time, looking at the same things but differently. The key to improving understanding is about uplifting and upskill the auditors to operate at the same level of management, in order to present findings and information in a way that will achieve the same outcomes and goals of Management. By doing this they will become a value-added function that Management can respect and work with (Appendix E18).

> ***IQ5:*** *What would you define as IT-Business alignment and why would you think it is important?*

SF6: Business-IT alignment means integrated digital maturity and technology objectives within the business capability in order to create insights for improved value decision making.

P3 mentioned that, “Business-IT alignment is defined in today’s world as Business and Management’s digital maturity” (Appendix E3). P3 also indicated that alignment means understanding the business capability model (Appendix F). P6 said that, “Thinking that IT is an enabler and not integrated into the business strategy and as part of the business strategy is archaic… IT needs to form the business of the future and all strategic business discussions cannot do with an IT appreciation in some form or another” (Appendix E6).

Only two CIOs (IT stakeholders) of the 11 companies serve on their company’s Executive Committee or Board. This would appear that all CIOs seem to find Business-IT alignment or integration easier. It is also clear that within these companies, business process understanding of IT, and thus IT auditors is drastically improved. P8 and P12 were the only IT managers serving at executive level of their businesses or companies.

According to P8:

> [The] CIO of this business sits on board level. This creates alignment between IT and the business as CEO and CFOs recognise the role and contribution of IT to the business. Business sees IT as a mutual beneficial strategic asset for the future of the business. If the CIO serves on the Board, the alignment within IT and Business comes naturally. The focus then shifts from being operational and “fighting fires” to optimising business processes and adding business value to the business through technology. Business-IT alignment also refers to the budget and the percentage discussions IT has with the business on current and future business integrating technologies (Appendix E8).

SF7: Business-IT alignment is important for the future of any business; true IT integration means improving the sustainability of the business.

Business-IT alignment is important for the future of any business. IT needs to form the business of the future and strategic business discussions cannot be made without an IT appreciation in some form or another (P7, P8: Appendix F).

P7 stated:

> When IT’s business is solely aligned to meeting the requirements of the business. IT’s Key Performance Indicators (KPIs) are set to what the needs of the business are. There are enough IT risks featuring on the Risk Committee

and currently IT plays a pivotal role is business continuity management and business insights. IT and technology are key to the future of this business. If you want to be an insurance company in 10 years' time, you have to offer clients and customers a technology solution. How is technology going to benefit the insured? How is the insurer going to assist the insurer with more inflation to help with his/her lifestyle, financial situation, risks and insurance to cover those risks (Appendix E7).

SF8: Business-IT alignment is the percentage focus, involvement, incorporation, and money IT receives from business. It thus shapes and determines the pace of business growth.

Business-IT alignment also refers to the budget and the percentage discussions IT has with the business on current and future business integrating technologies. True IT integration means improving the sustainability of the business (P10, P11: Appendix F).

P10 asserted:

> [The] CIO has involved board representation and reports to the CEO. The CEO views the entity as a technology business, as it relies massively on technology for the business. IT-Business alignment is critical. How do you make your business and CEO see the long run sustainable benefits of technology and look past the short-term investment? It is about education, the ability to talk business, not tech language. Understanding business and how it feels, being able to explain to other people how business wants technology to help them but not understanding technology itself (Appendix E10).

P11 mentioned that:

> IT-Business alignment is only achievable if it is truly driven from the top, i.e. CEO, CFO, and/or Chairperson of the Board. Top-level change thinking does not create alignment, it creates IT integration. True IT integration means improving the sustainability of the business. IT forms part of new product development and is in demand to lead technology-enabled business projects (Appendix E11).

SF9: The organisational structure and levels of the CIO determine the Business-IT alignment.

According to P8, "If the CIO serves on the Board, the alignment within IT and Business comes naturally" (Appendix E8). P16 said that it is about IT moving from service alignment to business objectives alignment (Appendix F).

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

SF10: External Audit does not add value due to the faultfinding approach of auditors.

Five (5) participants opined that External Audit is always seen as identifying faults and not helping and assisting. This, together with a lack of communication, ends up doing more harm than creating a shared understanding (P1, P2, P3, P4, P10: Appendix F). The lack of communication breaks down shared context understanding. P18 added that, "the default position of Audit should be to trust rather than to distrust. This creates excellence in execution" (Appendix 18).

P3 argued:

> The external and internal auditing mentality of faultfinding or a traffic cop approach. This creates a counterproductive and counter-processes improvement response from auditees. Audit is always seen as identifying faults and not helping and assisting. This ends up doing more harm than creating a shared understanding. Audit and especially External Audit are seen as finding something wrong because they have to and for the sake of finding something (Appendix E3).

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

SF11: Challenges in shared context understanding can be overcome by creating a positive integrating, management-involved culture of mutual value by providing more experience as an auditor, and through allocating time and improving audit planning and support.

This summary finding is supported by P1 and P2 who asserted that these challenges might be overcome by having more experience as an auditor, and through allocating time and improving audit planning and support (Appendix F). A technology-integrated culture is needed. This also means that a huge amount of training is needed within all facets of the business P2, P3, P5: Appendix F). P2 added that an "audit and process improvement culture" would ensure that the challenges could be overcome (Appendix E2).

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance? If yes, what perceptions, and why would those perceptions differ? If no, why do you think there would not be a difference in perception?*

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

IQ8 and IQ9 are combined as they are related.

SF12: All participants agreed that a difference in perception does exist within IT Audit and Governance.

For example, P5 indicated that, “Different perceptions exist. In an aligned business, IT-Business and Internal Audit are all working towards the similar goal of improving controls to improve the value of business. External Audit has a different perception because they have a different goal or purpose towards shareholders and not Management” (Appendix E5). Three participants stated that perceptions indeed differ because the same risks of the business are not perceived in the same way. (P5, P11, P16: Appendix F). Four participants agreed that being limited to no historical context creates different perceptions because of what they do, how audit is done, and if audit is done from a zero base (P1, P2, P3, P4: Appendix F). According to P5, a value point all participants generally agreed on is that “External Audit is concerned with an annual once-off business opinion rather than Management’s requirement for a continuous business assessment” (Appendix E5).

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

SF13: External audits are conducted annually as per instruction from Management; no or limited interaction and communication occurs. The standard general controls and risks for IT are verified but do not add value to the context of the business or to the latest best practices and technology.

P1, P2, and P3 indicated that no or limited interaction between the stakeholders occur. External audits are done via an instruction from Business and Management with no or limited involvement from IT in terms of planning for the audit (P1, P2, P3: Appendix F).

P8 warned that there is "no or limited business involvement. More or less the same questions each and every year" (Appendix E8). P11 maintained that, "audit happens as per instruction from [the] CFO and the standard general controls and risks for IT are checked, but do not add value to the context of the business or to the latest best practices and technology" (Appendix E11).

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

SF14: There is a lack of constant, consistent, and correct communication between the stakeholders' interactions within IT Audit and Governance.

Twelve (12) of 18 participants agreed that the interaction between these stakeholders can be enhanced through improved constant, consistent communication, positioning, and similar shared objectives to ultimately improve the business. P5 testified:

> Audit and especially External Audit's ability to accept management focus areas, concerns, and controls. One of the less acknowledged factors is personality fit of an auditor. The auditing concept is a confrontational relationship with the potential for conflict and abrasiveness. Auditors need to be pragmatic and it is important to be relational throughout the process. Auditors need to be relational" (Appendix E5).

P14 suggested "a tool in order to instantly lift the experience of a clerk by quickly understanding the business context and experience", thereby helping to improve the interactions" (Appendix E14).

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

SF15: Perceptions of IT differ due to stakeholder experience, skills, culture, background, personality, the audit objective, and faultfinding or "policeman" mentality of the Audit stakeholder.

Three (3) participants corresponded by stating that perceptions differ due to experience, skills, culture, background, personality, audit objective, and faultfinding or "policeman" mentality (P1, P2, P6: Appendix F).

P6 remarked:

> Because IT people are proud and any audit is perceived as punitive. IT audit has become more important because of the rising awareness of IT and cyber security and the fact that IT strategic importance on the Board's agenda has substantially improved. The future of IT is also changing, and this all creates different perceptions (Appendix E6).

P5 added that, "If you want to understand context as an auditor for this group, you have to fully comprehend and understand context of the vastly different businesses at root (operational) level" (Appendix E5).

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

SF16: The perception from the Business and IT stakeholders is that they as auditors must find something wrong. External Audit has a different objective and interest in the audit.

P2 argued that, "Audit's perception is sceptical and prescriptive. Concerned about security, directed by the CEO… The perception is that they as auditors have to find something. The perception is shaped by cautious honesty and feedback. Auditors' perception is truly shaped by their genuine interest in the context of our business" (Appendix E2).

P9 stated:

> "Especially External Audit, little to none pre-work and pre-audit preparation work or context creation is done. It feels like the same questions are asked year after year. External Audit misses the mark in understanding the business exposure to certain risks if they do not comprehend the business situation and the IT supporting situation. There seems to be a lack of planning on their side using the same template each year" (Appendix E9).

P10 asserted that, "External Audit and sometimes Audit only takes an accounting approach to IT audits and it is not that simple. [They are] seen as approaching audits with no value driven add and only deriving findings" (Appendix E10).

IQ14: What do you think are the perceptions of your Business stakeholder and how do you shape this perception?

SF17: It is evident that the Business stakeholder is not involved in External IT audits and IT Governance; this is clear from the other two stakeholders. The "IT" part of the audit is IT's problem.

P5 asserted that, "The Group's business model of Management buy-in and trust is liberating. In a business model of this Group, there are advances and disadvantages. One of the disadvantages is dependency on great, effective, and efficient management and their ability to lead" (Appendix E5). The Business perception is that IT is managing the IT part of the audit, with little to no involvement.

The Business stakeholder audit perception is as follows:

> External Audit: necessary evil in order satisfy only one need. Internal Audit: now valued, but this has not always been like that. We will always work hard to keep it that way. Where External Audit is seen as a necessary evil, internal audit is seen as a necessary blessing. Moving from a cost centre as audit to a value-added cost which is not "accounted" because it is worth something, and important for Management (Appendix E18).

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

SF18: Knowing the business and knowing the business processes in detail is very important, not only for IT, but also for shaping perceptions and obtaining a shared understanding.

P6 affirmed that, "IT same as business thinks that findings and reports need to be balanced and contextual" (Appendix E6). P3 and P8 added that knowing the business and knowing the business process in detail is very important not only for IT but to shape any perception and obtain shared understanding (Appendix F). P8 stated that, "Knowing the business and knowing the business process in detail is very important, not only for IT but also to shape any perception and obtain shared understanding" (Appendix E8).

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: In what ways can a system such as ALICE understand the context of an entity better?

SF19: All stakeholders agree that the value of an AI Audit System that understands context can be used for more than just an auditing system by adding proactive management functionality.

From the interviews, the following applications and functionalities have been identified:

i. Business intelligence and insights
ii. Business continuity
iii. Operationalise IT risk and IT service management
iv. Information and cyber security
v. Deep structured learning
vi. Automatic or robotic process automation to enable exception reporting and process automation
vii. Machine Learning – the study of algorithms and mathematical models that computer systems use to progressively improve their performance of the task

The AI Audit System should provide the capability of seeing and measuring many things simultaneously, including the capability of information gathering (insight) and centralising information in order to make improved decisions and to enable IT (and not only the CIO) to manage by exception (P1, P11, P17: Appendix F).

P11 stated the following: “To enable IT and not just [the] CIO to manage by exception. Business continuity and security. Other ways in which ALICE could understand context better:

- Automation and analyse of reporting and emails
- Connections to related businesses and industries
- Building an audit continuity
- From financial data, produce context for verification
- Automated change management” (Appendix E11)

P18 argued that, “Being the trusted source of the truth, being the systems that collects, collates and stores the one version of the truth together with the why’s and the context analysis applied to the information” (Appendix E18).

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

SF20: A context understanding system constitutes a system proactively addressing real business controls and management insights. The Management stakeholder group identifies efficiencies as a collective benefit from an audit system like ALICE.

P6 stated the following: "Audit should be a product out of management implementation to improve the business, within Management's control and context understanding addressing real business controls than an archaic snapshot of business snapshot at a point in time" (Appendix E6).

P12 said that, "By making dependable assumptions about the situation and context of the Business and IT, she suggests regulations, trends, and evaluations to report on the shortcomings or gaps. Applying the information she gathers from other businesses, internal or external to the Group, to the bank" (Appendix E12). P8 testified that, "The benefits would be creating a unified business goal understanding, trust, efficiencies, elimination of time to take the audit, and cyber security benefits" (Appendix E8).

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

SF21: There are many insights that could be beneficial for a context understood AI Audit System.

The following insights can be beneficial from a context understood AI Audit System:

i. Exceptions and patterns in controls to improve root cause analysis of problems and issues
ii. Cyber and information security insights and proactive norms and exceptions
iii. Trends analysis and comparison information in order to provide real business value for decision making
iv. Trends, financial problems, deviation analysis, and different exceptions

P2 stated the following: "Insights in order to improved business efficiencies, and insights into productivity and effectiveness; insights to show trending and the context about the insights" (Appendix E2).

As an example, P14 stated:

- "Cyber Security Insights, vulnerability, exception and alert management
- I would not want Alice to predict the future, there are ERP systems and tools on the market that can predict the future of the business and trend-out scenarios
- The key lies in the cyber security and vulnerabilities management" (Appendix E14)

P5 affirmed:

> "One management application ALICE could employ is that ALICE needs to incorporate an ethical hacking capability and provide to Management the proactive ability to identify cyber vulnerabilities, risks, and controls.
>
> - Proactive financial management heads-up and marketing presence insights and alerts
> - Trends, financial problems, deviation analysis, and different exceptions
> - Intuitive financial analysis
> - Continuous auditing value
> - Careful, comparable benchmarking information within context and on common factors
> - Exception and/or deviation analysis" (Appendix E5)

IQ19: In your opinion, what would you rate as the most important context ALICE could have?

SF22: No specific context areas are seen as more important than others for a context aware AI Audit System.

This was a rating question where all 18 participants were asked to provide or highlight context headings that stand out to them (Figure 4.5). Participants were asked to provide four (4) or five (5) contexts that are important to them, and then prioritise these contexts according to importance.

The detailed results for rating question IQ19 in terms of **total selection** (Figure 4.5) illustrate that:

i. Fifty percent (50%) of the participants (9 of 18) chose *Risk context and appetite* and *Technology context, trends and analysis.*
ii. Eight (8) of the 18 participants chose *Organisation and IT strategy alignment* and *Financial context and understanding.*

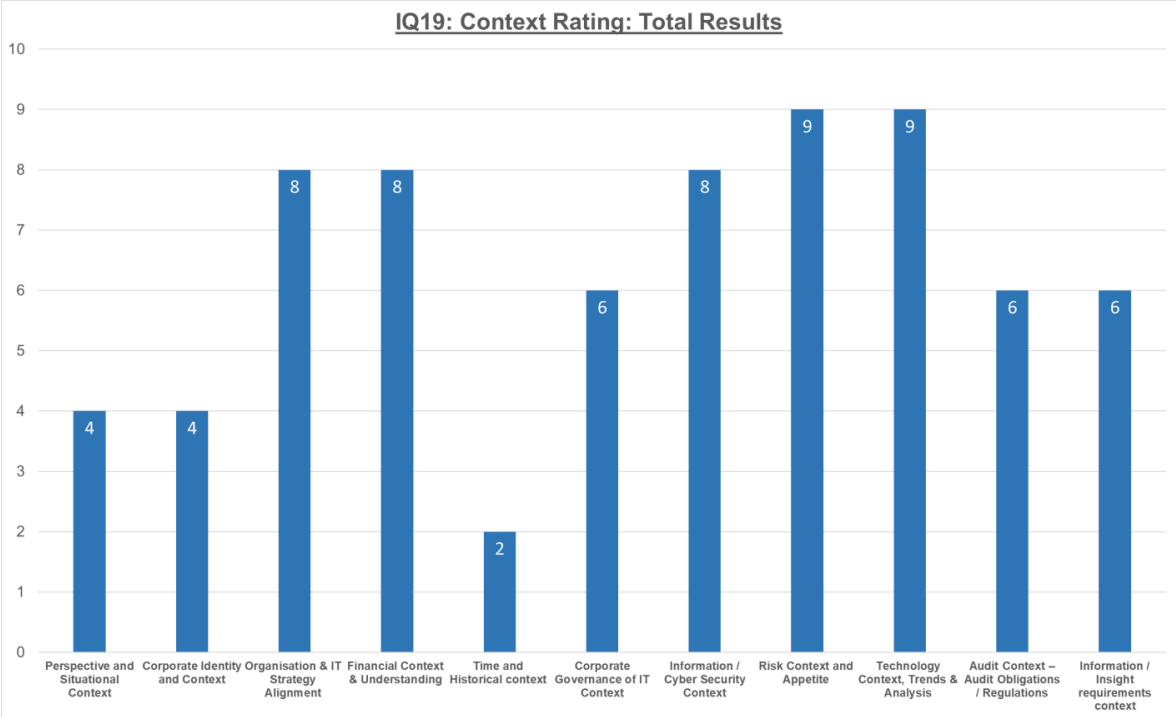


Figure 4.5: IQ19 - Context Rating Total Results

The detailed results from IO19 in terms of **first (1st) prioritisation** (Figure 4.6) include:

i. Five (5) participants selected *Organisation and IT strategy alignment* as first priority.

ii. *Risk context and appetite* were selected as 1st by four (4) participants.

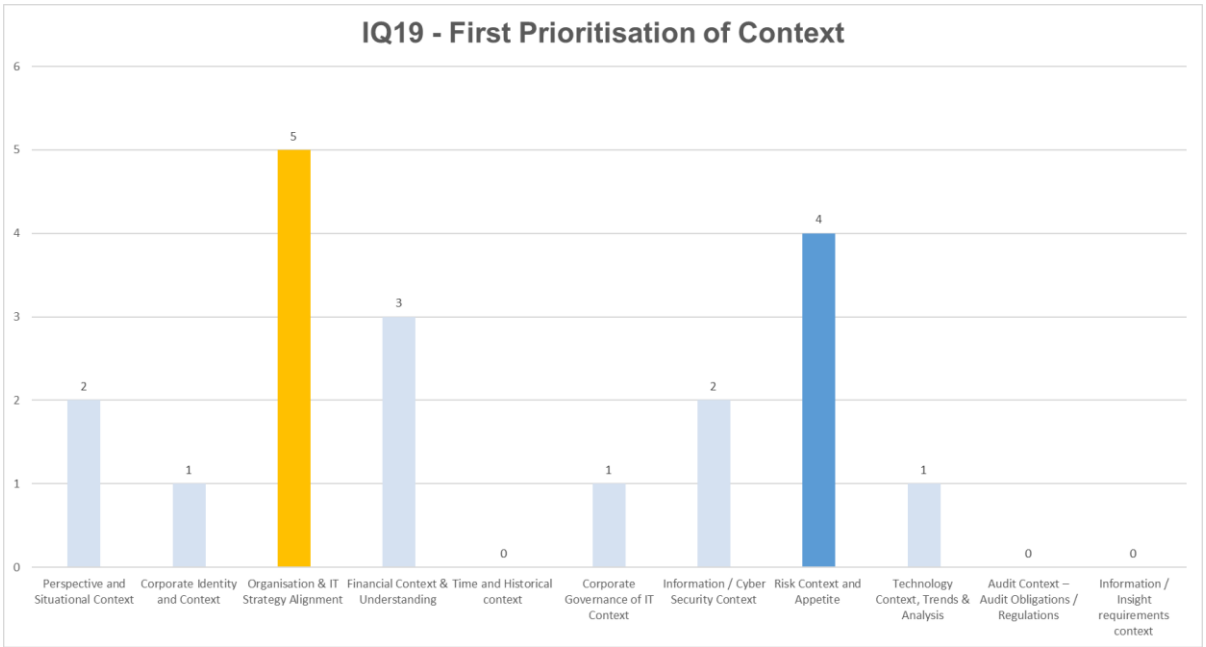


Figure 4.6: IQ19 - First Prioritisation of Context

The detailed results from IQ19 in terms of second (2nd) prioritisation (Figure 4.7) are:

i. *Information and cyber security context* were selected as 2nd priority by five (5) participants.

ii. *Risk context and appetite* were selected as 2nd priority by four (4) participants.

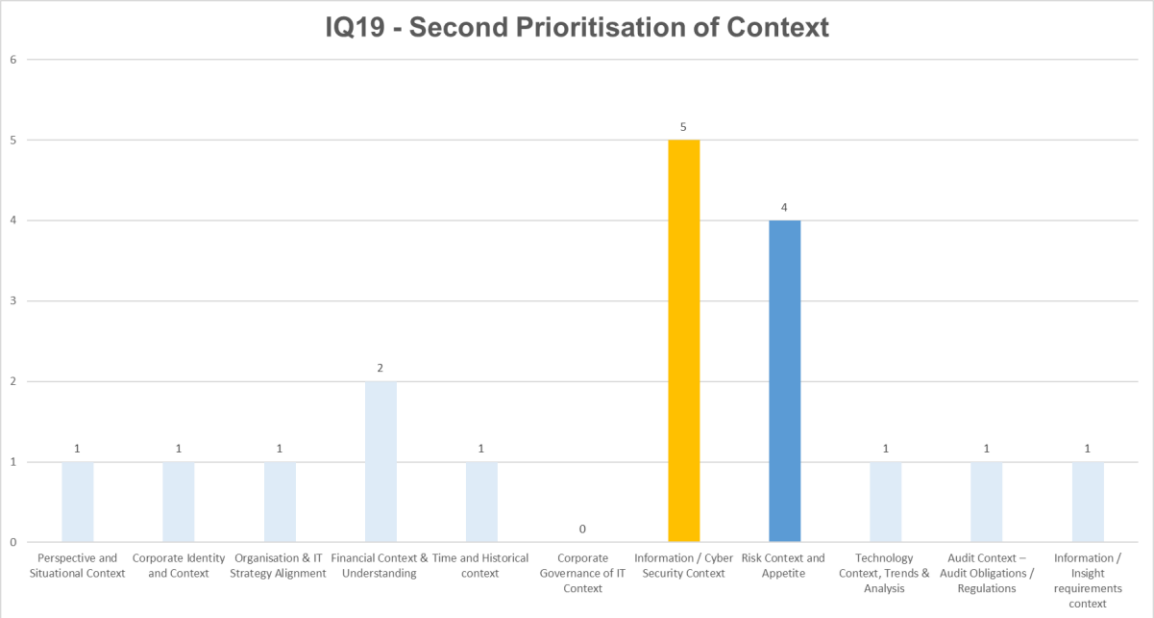


Figure 4.7: IQ19 - Second Prioritisation of Context

IQ20: *In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?*

SF23: Machine learning and exception reporting are techniques an audit system could use to improve context, but only through connections.

P5, P6, P7, and P8 stated that exception reporting are techniques that could improve context. By having a system that understands the standard reporting and audit requirements, and having it ready for reporting, in addition to having management and financial dashboards available for exception reporting management, context may be improved. P18 summarised the answer by adding: "Building up context from past and present information in order to build and keep continuity through time stamping. The future model lies in the safe assumption of context, growing context" (Appendix E18).

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

SF24: There is a need for the ALICE AI Audit System to gather context both automatically and manually.

For example, P8 indicated the following: “Both, pushing or publishing information and insights to Management, whether it is used daily. In every business there are very few buyers of information; nobody would like more information. It is about providing or pushing the correct personal valuable insights to invoke correct decision making” (Appendix E8). P16 (Appendix E16) added that, “Both, it is important that she has the ability to automatically find, because it is not always apparent for a human. Humans have habits and emotions, preconceived notices and biases” (Appendix E16).

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

SF25: Cyber security, compliance regulation, and business continuity remain the highest priority for contextualising risks.

P5 (Appendix E5) stated the following: “Compliance/regulatory context and the controls related to these – project work that shows context, a work in progress, accounting reporting. P14 added that, “Compliance risk, regulation, transactional data and cyber security risk data” (Appendix E14).

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

SF26: Both metric and a full description for context are needed.

All of the participants agreed that both metric (providing a metrics measurement for context understanding) and a full description or explanatory reasons for context to the user of the AI Audit System are needed. As an example, P2 mentioned the following: “Both, it is important to understand what to do next or about it. In combination of decryption and rating in order for the audience understand the story, there is always a background and story to create a context understanding” (Appendix E2).

4.6 Synopsis of the summary findings

Table 4.4 illustrates as a synopsis, the summary findings linked to categories, and the corresponding IQs, RSQs and RQs.

Table 4.4: Summary findings linked to IQs, RSQs, and RQs

SF No.	Summary findings	Categories	Linked IQs	Linked RSQs	Linked RQs
RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?					
RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?					
SF1	Context is unique for each organisation, department, and individual. All stakeholders agree that it refers to a similar comprehension of the "how" of the business by the various role-players. Context understanding is affected down to an individual's personal background and experience.	• Uniqueness of context	IQ1 IQ2	RSQ 1.1 RSQ 1.2	RQ1
SF2	Stakeholders agree that there is inadequate context creation due to a lack of business process understanding, starting at the top-level partner within the Audit and Risk stakeholder.	• Business process understanding • Business process understanding starting from Senior down to Middle Management	IQ2 IQ3 IQ4	RSQ 1.1 RSQ 1.2	RQ1
SF3	All stakeholders agree that context creation takes time, and changes in personnel do not build institutional context, knowledge, experience, and organisational wisdom.	• Context creation for the organisation is built from historical information and takes time and continuity	IQ2 IQ3 IQ4	RSQ 1.1	RQ1
SF4	All three stakeholders agree that business understanding is crucial to create synergies in priorities and risk management and is becoming increasingly important.	• Business process understanding	IQ3 IQ4	RSQ 1.1	RQ1
SF5	The following factors contribute to improving context understanding: • Increase in quality time allocated to the business processes • Understanding business risks in the same way • Constant and consistent communication • Business-IT alignment • The Management and Finance stakeholder group highlights especially experience and communication as two factors contributing to improving shared context understanding	• Context creation for the organisation is build from historical information and takes time and continuity • Constant and consistent communication and involvement between stakeholders improves context creation	IQ4	RSQ 1.1	RQ1
SF6	Business-IT alignment means integrated digital maturity and technology objectives within the business capability in order to create insights for improved value decision making.	• Total IT integration into the business objectives ensures Business-IT alignment and thus shared context understanding	IQ5	RSQ 1.1	RQ1

SF7	Business-IT alignment is important for the future of any business; true IT integration means improving the sustainability of the business.	• Future business and growth are dependent on Business-IT alignment	IQ5	RSQ 1.1	RQ1
SF8	Business-IT alignment is the percentage focus, involvement, incorporation, and money IT receives from business. It thus shapes and determines the pace of business growth.	• Future business and growth are dependent on Business-IT alignment	IQ5	RSQ 1.1	RQ1
SF9	The organisational structure and levels of the CIO determine the Business-IT alignment.	• Structure creates alignment	IQ5	RSQ 1.1	RQ1
RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?					
SF10	External Audit does not add value due to the faultfinding approach of auditors.	• External Audit investment in organisational value creation	IQ6	RSQ 1.2	RQ1
SF11	Challenges in shared context understanding can be overcome by creating a positive integrating, management-involved culture of mutual value by providing more experience as an auditor, and through allocating time and improving audit planning and support.		IQ7	RSQ 1.2	RQ1
RSQ 1.3: What are the different perceptions within IT Audit and Governance?					
SF12	All participants agreed that a difference in perception does exist within IT Audit and Governance.	• Uniqueness of context	IQ8 IQ9	RSQ 1.2	RQ1
RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?					
RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?					
SF13	External audits are conducted annually as per instruction from Management; no or limited interaction and communication occurs. The standard general controls and risks for IT are verified but do not add value to the context of the business or to the latest best practices and technology.	• External Audit investment in organisational value creation	IQ10	RSQ 2.1	RQ2
SF14	There is a lack of constant, consistent, and correct communication between the stakeholders' interactions within IT Audit and Governance.	• Constant and consistent communication and involvement between stakeholders improves context creation	IQ11	RSQ 2.1	RQ2
RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?					
SF15	Perceptions of IT differ due to stakeholder experience, skills, culture, background, personality, the audit objective, and faultfinding or "policeman" mentality of the Audit stakeholder.	• Uniqueness of context	IQ12	RSQ 2.2	RQ2
SF16	The perception from the Business and IT stakeholders is that they as auditors must find something wrong. External Audit has a different objective and interest in the audit.	• External Audit investment in organisational value creation	IQ13	RSQ 2.2	RQ2

SF17	It is evident that the Business stakeholder is not involved in External IT audits and IT Governance; this is clear from the other two stakeholders. The "IT" part of the audit is IT's problem.	• Constant and consistent communication and involvement between stakeholders improves context creation	IQ14	RSQ 2.2	RQ2
SF18	Knowing the business and knowing the business processes in detail is very important, not only for IT, but also for shaping perceptions and obtaining a shared understanding.	• Business process understanding	IQ15	RSQ 2.2	RQ2
RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?					
SF19	All stakeholders agree that the value of an AI Audit System that understands context can be used for more than just an auditing system by adding proactive management functionality.	• Context-aware system creates proactive management capability	IQ16	RSQ 2.3	RQ2
SF20	A context understanding system constitutes a system proactively addressing real business controls and management insights. The Management stakeholder group identifies efficiencies as a collective benefit from an audit system like ALICE.	• Context-aware system creates proactive management capability	IQ17	RSQ 2.3	RQ2
SF21	There are many insights that could be beneficial for a context understood AI Audit System.	• Context-aware system creates proactive management capability	IQ18	RSQ 2.3	RQ2
SF22	No specific context areas are seen as more important than others for a context aware AI Audit System.		IQ19	RSQ 2.3	RQ2
SF23	Machine learning and exception reporting are techniques an audit system could use to improve context, but only through connections.		IQ20	RSQ 2.3	RQ2
SF24	There is a need for the ALICE AI Audit System to gather context both automatically and manually.	• Context-aware system creates proactive management capability	IQ21	RSQ 2.3	RQ2
SF25	Cyber security, compliance regulation, and business continuity remain the highest priority for contextualising risks.	• Cyber security, compliance regulation, and business continuity remain highest priority for contextualising risks	IQ22	RSQ 2.3	RQ2
SF26	Both metric and a full description for context are needed.	• Cyber security, compliance regulation, and business continuity remain highest priority for contextualising risks	IQ23	RSQ 2.3	RQ2

Table 4.5 summarises the categories into themes and provides themes T1 to T6.

Table 4.5: Categories to themes

Categories	Theme No.	Themes
Uniqueness of context	T1	Business Process Understanding
• Business process understanding • Business process understanding starting from Senior down to Middle Management		
Context creation for the organisation is built from historical information and takes time and continuity	T2	Historical Context Retention
Constant and consistent communication and involvement between stakeholders improves context creation	T4	Involvement and Communication
Total IT integration into the business objectives ensures Business-IT alignment and thus shared context understanding	T5	IT-Integrated Context Creation Culture
Future business and growth are dependent on Business-IT alignment	T5	IT-Integrated Context Creation Culture
Structure creates alignment	T4	Involvement and Communication
External Audit investment in organisational value creation	T3	External Audit Mentality and Interests
Context-aware system creates proactive management capability	T6	Context-aware System creates Proactive Management
Cyber security, compliance regulation, and business continuity remain highest priority for contextualising risks	T6	Context-aware System creates Proactive Management

4.7 Theme development

The summary findings (SFs) were categorised into themes as shown in Table 4.6 and linked to the summary findings, thus providing the trail of evidence.

Table 4.4 shows the relationship between the RSQs and the RQs. The SFs are linked to the themes, which in turn are linked to the objectives.

Table 4.6: Theme development: research questions linked to themes and to summary findings

Research Problem	**There is a lack of shared context awareness among all stakeholders when conducting IT audits and implementing IT Governance.**
Research Aim	**The aim of the study was to explore the value of context awareness or shared context understanding within IT Audit and Governance.**

RQs/RSQ	Objectives	Theme No.	Themes	Linked Summary Findings							
RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?											
What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?	Identify and determine shared context information as well as the types of shared context information, and measure the stakeholders' (Business, IT, and Audit) understanding of shared context information.	T1	Business Process Understanding	SF1	SF2	SF4	SF5	SF18			
		T2	Historical Context Retention	SF3	SF12						
What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?	Identify and determine the challenges internal stakeholders face in the absence of a shared context understanding.	T3	External Audit Mentality and Interests	SF10	SF11	SF15	SF16	SF13			
		T4	Involvement and Communication	SF14	SF17						
What are the different perceptions within IT Audit and Governance?	Identify and examine why differences in perceptions exist.	T3	External Audit Mentality and Interests	SF12	SF13	SF15	SF16				

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?											
How do stakeholders interact when conducting IT audits and implementing IT Governance?	Classify the various methods of how stakeholders interact.	T5	IT-Integrated Context Creation Culture	SF13	SF14	SF15	SF16	SF17	SF18		
How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?	Distinguish between the different perceptions of the internal stakeholders when conducting IT audits and implementing IT Governance.										
How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?	Examine how shared context understanding can be improved among various internal stakeholders using the AI Audit System, and what constitutes context awareness for an AI Audit System. Furthermore, investigate how shared context understanding using ML techniques can improve business processes.	T6	Context-aware System creates Proactive Management	SF19	SF20	SF21	SF22	SF23	SF24	SF25	SF26

4.8 Summary

Chapter Four covered the results and findings of the study in detail as derived by the researcher. The chapter discussed the case of the Group as well as the AI Audit System called “ALICE”, at which the final questions in the interview guide were directed. The participant representation from the three (3) stakeholders in Audit and Governance were stated. The researcher elaborated on the data analysis, with 154 common and standout findings further summarised into 26 summary findings (SFs) to address the RSQs.

The 26 SFs were then categorised and linked to six (6) themes. Three evidently strong themes were identified as: *i) Business Process Understanding; ii) Historical Context Retention;* and *iii) Involvement and Communication*.

Context understanding is unique not only to organisations, but also within organisations and levels. Additionally, it is evident from the responses that context-aware AI Audit Systems are and must be more functional than being mere audit systems – these systems need to create proactive management capabilities with context insights that are built over time.

CHAPTER FIVE: DICUSSION

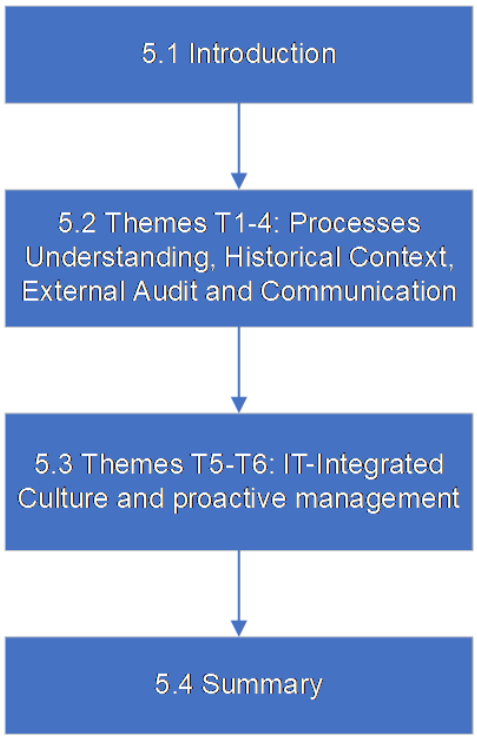


Figure 5.1: The flow for Chapter Five

5.1 Introduction

Themes have been developed from the findings (Table 4.6). In this chapter, the outstanding themes are discussed in relation to the RSQs, literature, and feedback from the interviews in order to answer the RQs. Each theme is introduced and the responses to each SRQ are discussed in detail.

5.2 Themes T1 – T4: Processes Understanding, Historical Context, External Audit, and Communication

Themes:

i. T1: Business Process Understanding
ii. T2: Historical Context Retention
iii. T3: External Audit Mentality and Interests
iv. T4: Involvement and Communication

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

CA refers to understanding the business processes in the same way. In an endeavour to answer RSQ 1.1, it is clear that context understanding of a business by all the stakeholders is a top-to-bottom in-depth understanding of the business

processes. Context is unique for each organisation, department, and individual. The shared part of ‘shared CA’ is the similar comprehension of the ‘how’ of the business by different role-players, in this case, the three stakeholders. This is supported by Rosemann and Recker (2009) who state that designs should take cognisance of internal factors and business processes.

An individual's personal background and experience affect shared context understanding. This is evident from the responses of (especially) auditors who attempt to understand the risks of the business. The lack of context creation is due to the auditor’s background and level of experience in understanding the specific business’s processes.

The lack of business process shared understanding in turn affects the way that risks and business priorities are understood. Business understanding is crucial to create synergies in priorities and risk management and is becoming increasingly important. From the literature, Davis (2005) specifies that an IT audit is an investigation of the management controls within the IT infrastructure, systems, and *processes*. The evaluation of obtained audit evidence determines if the systems are safeguarding assets, maintaining data integrity, and operating effectively *to improve processes* and ultimately achieve the organisation's goals or objectives (Davis, 2005).

Additionally, it is evident from the literature and interviews that Business-IT alignment, and now also Business-IT Integration, will contribute hugely to a shared common understanding of IT Audit and Governance. Business is not always involved in audits and risks, but if IT is the business, and technology and digital maturity objectives are integrated within the business capability, one will see a vast improvement in auditors and businesses’ shared understanding of business processes. Technology integration into the business to ensure Business-IT alignment is not only cardinal to business success, but also to the agility and sustainability of business. ISACA (2012) confirms that this alignment is a harmonisation between the strategic business objectives (intent, current strategy and goals) and the organisation’s investment in IT in terms of the value that IT delivers to the organisation. This seems to be confirmed by the interviews – the more this harmonisation takes place, the more agreed shared context understanding can take place.

Context creation takes time and effort to build over a lengthy period. Change in Audit stakeholder personnel does not advance institutional context, knowledge, experience, and organisational wisdom. It is clear that historical context retention or

the keeping record of context is very important to bring everyone to the same understanding quickly. This also speaks true to the fact that people understand a situation better if they have an enhanced understanding of the background context and bigger picture context.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

It is evident from the responses is that there is a huge difference in objectives and interest between External Audit and the Management and IT stakeholders. One has to differentiate between Internal Audit and External Audit. External Audit does not add value due to the faultfinding mentality of the external auditors who limit their time and involvement in the business. External audits are conducted annually as per instruction from Management; no or limited interaction and communication occurs. The standard general controls and risks for IT are verified but do not add value to the context of the business or to the latest best practices and technology. It seems that limited or no time is spent on understanding the business processes and the technology that supports these processes. It would appear that External Audit does not have the same interest of business value at heart as the business stakeholders.

The differences in objectives and interest could also be supported by more involvement from Business and Management. SF17 confirms that the IT and Audit stakeholder groups feel the Business stakeholder is not involved in external IT Audit and Governance, and perceives it as a necessary evil and punitive.

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

All participants agreed that a difference in perception does exist within IT Audit and Governance, which can be attributed to experience and different versions of information. The various stakeholders' perceptions differ in terms of the business processes because of variable individual and groups' experience, skills, culture, background, personality, and the objective of an audit.

The perception from the Business and IT stakeholders is that they as auditors have to find 'something wrong'. External Audit has a different objective and interest. External Audit's perception is sceptical and prescriptive (SF16).

5.3 Themes T5-T6: IT-Integrated Culture and Proactive Management

Themes:

i. T5: IT-Integrated Context Creation Culture
ii. T6: Context-aware System creates Proactive Management

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

In an attempt to identify the various methods of stakeholder interaction when IT audits are conducted and governance is implemented, as per the research objective, it is evident that there are not many methods of interaction, but only one. Interaction between Management and Finance, the IT department, and Internal Audit is an integrated as part of business and takes place throughout the year, whereas external audits are conducted annually as per instruction from Management. Standard general controls and risks for IT are checked and done using a 'tick box approach', with no context understanding of the business processes. This, according to many interviewees including the Audit and Risk stakeholders group, adds no value to the context of the business and the latest best practices and technology. External Audit's perception of the interaction is sceptical and prescriptive. Internal Audit is different; the communication, alignment, and team inclusion contribute to a positive collective relationship. Internal Audit's function is seen to add value, while External Audit's work within this interaction is perceived as compulsory.

It was evident from the participant interviews that the interaction lacks constant, consistent, and correct communication between the stakeholders. One of the participants suggested the use of smart goals in the communication strategy, which are specific, measurable, achievable, results orientated and timely (Annexure F, F79). Two-way communication from Audit in a language that resonates with Management is the key to foster business process context creation that is audit-objective. The lack of communication and Management (stakeholder) involvement breaks down shared context understanding.

An integrated technology and IT-aligned culture is needed to foster Management and Finance involvement. A culture of top-to-down Management involvement in all facets of IT Audit and Governance is needed.

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

Perception differences are attributed to stakeholder experience, skills, culture, background, personality, the audit objective, and a faultfinding or 'policing' mentality of the Audit stakeholder. SF16 states that the perception of the Business and IT stakeholders is that they as auditors must find something wrong. External Audit has a different perception of the business itself as well as the business processes, objectives, and interest. External Audit's perception is sceptical and prescriptive. Knowing the business and knowing the business process in detail is very important, not only for IT, but also for shaping perceptions and obtaining a shared understanding. External Audit does not seem to understand the Business and IT situation, and thus do not seem to add value.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

All agree that the value of a systems understanding context is that the system can be used for more than just an auditing system. It can also be used as a proactive management system to address the controls that improve business processes proactively. Applying context to a system that can maintain and build historical, institutional, and business process context provides all stakeholders not only with a continuous proactive management system, but also adds value in terms of more efficient and effective audits. Using machine learning techniques, (reference) systems will provide Management the advance capability of seeing and measuring many things simultaneously, including the capability of information gathering (insight) and centralising information in order to make improved decisions, and to enable IT (and not just the CIO) to manage by exception, thereby improving the business processes. The applications and business processes identified where such systems can and will add value, include:

i. Business intelligence and insights
ii. Business continuity
iii. Operationalise IT risk and IT service management
iv. Information and cyber security
v. Deep structured learning
vi. Automatic or robotic process automation to enable exception reporting and process automation
vii. Machine learning – the study of algorithms and mathematical models that computer systems use to progressively improve their performance of the task in a process

A context understanding system constitutes a system proactively addressing real business controls and management insights. The Management stakeholder group identifies efficiencies as a collective benefit from an audit system such as ALICE. This is because of the time and effort it will potentially save with context understanding and context creation. Context aware connected systems such as ALICE could potentially save businesses large amounts of time and money in proactive cyber security, compliance regulation, and business continuity controls for those risks. By automatically gathering context and providing all stakeholders with accumulated historical insights in context with e.g. other businesses or groups, a system can add value in improving the business process. With historical context insights, trend analysis can be determined after some time. Trend analysis context could assist management insights into control and business process improvements.

5.4 Summary

The discussion on the themes is based on the RSQs, literature review, and interview responses. The results of this study focus on the business processes where CA, and thus shared context understanding, refers to a similar understanding of, and communication about the business processes. Business process shared understanding in turn affects the way in which risks and business priorities are understood. Business understanding, and specifically business processes context, is crucial to create synergies in priorities and risk management.

It is evident from the participant interviews that the context in terms of interaction is unique for each organisation. The lack of constant, consistent, and correct communication between the stakeholders is important to address in obtaining a shared context understanding. The lack of communication and Management (stakeholder) involvement breaks down shared context understanding.

An integrated technology and IT-aligned culture is needed to foster Management and Finance involvement. A culture of top-to-down Management involvement in all facets of IT Audit and Governance is needed.

CHAPTER SIX: RECOMMENDATIONS, REFLECTION AND CONTRIBUTIONS

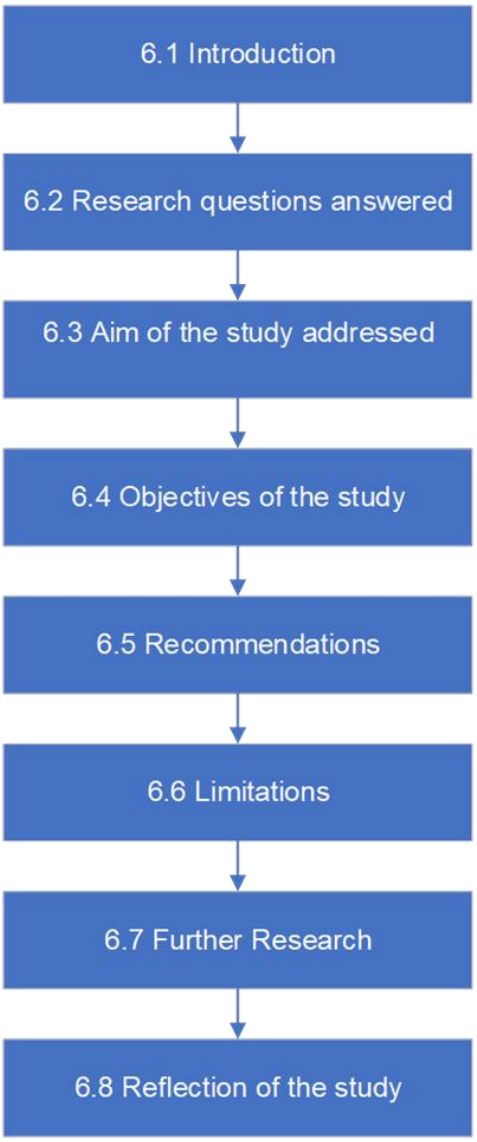


Figure 6.1: The flow for Chapter Six

6.1 Introduction

In this final chapter, the research questions, aim, and objectives of the study are answered and reported on. Recommendations will be made, where after general final remarks will conclude the study.

6.2 Research questions answered

6.2.1 Research Question 1

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

The factors affecting the shared context understanding among the stakeholders within IT Audit and Governance are:

i. Shared business process understanding or the lack of business process understanding
ii. The lack of accumulated knowledge and wisdom through retaining the organisation's historical context
iii. External Audit's objectives, mentality and interest in the audit is different to that of the business's internal stakeholders, which including Internal Audit. External Audit's focus is to complete the audit as fast as possible with the least amount resources and time spend; this affects the understanding amongst the stakeholders
iv. Continued involvement of Management, and especially the top Management of Audit and Business, in IT Audit and Governance
v. Lack of involvement and communication from all stakeholders

6.2.2 Research Question 2

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

Shared context understanding can be achieved through:

i. Creating a technologically integrated context aware culture with all stakeholders
ii. The use of Machine Learning and Artificial Intelligence techniques and systems
iii. Context aware systems to create efficiencies in audit implementations
iv. Context aware systems to establish proactive management and continued auditing management

6.3 Aim of the study addressed

The research aim was to explore the value of context awareness or shared context understanding within IT Audit and Governance.

The interview questions only served as a guideline during the interview process. The researcher probed the participants where necessary to uncover the needed detailed information, guided by open-ended questions involving "what" and "how" questions. The interview questions followed the structure of determining:

i. What shared CA is and what value it can add
ii. What the challenges are with IT audits
iii. How the challenges and/or how a shared understanding can be achieved

6.4 Objectives of the study

Linking the objectives to the themes, refer to Table 4.6 for reference.

6.4.1 Objective 1

To Identify and determine shared context information as well as the types of shared context information, and measure the stakeholders' (Business, IT, and Audit) understanding of shared context information.

T1: Business Process Understanding

Shared context information refers to the same or similar understanding of the business processes. Context is unique for each organisation, department, and individual. Business-IT alignment means (and is used for measuring) shared context understanding.

T2: Historical Context Retention

The development of business processes as well as the business and organisational context of these processes is crucial to bringing new IT Audit and Governance personnel up to date. It is clear that historical context retention (or keeping record of context) is imperative to obtain a shared or similar understanding among all stakeholders rapidly. Historical context changes the way in which we as humans see and act on things. Building and accumulating business process insights will assist internal and external stakeholders in working efficiently and obtaining effective outcomes.

6.4.2 Objective 2

Identify and determine the challenges internal stakeholders face in the absence of a shared context understanding.

T3: External Audit Mentality and Interests

A faultfinding mentality, different objectives, and limited time spent on investing in audit clients are stated as the reasons why External Audit does not add value to the audit process. External Audit partners do not invest sufficient time and effort in gaining context about the business they need to understand.

T4: Involvement and Communication

The lack of communication and Management (stakeholder) involvement breaks down shared context understanding.

6.4.3 Objective 3

Identify and examine why differences in perceptions exist.

T3: External Audit Mentality and Interests

Perceptions differ due to stakeholder experience, skills, culture, background, personality, audit objective, and faultfinding mentality of the Audit stakeholder.

6.4.4 Objective 4

Classify the various methods of how stakeholders interact.

T5: IT-Integrated Context Creation Culture

Interactions with External Audit take place annually, and they are perceived as not adding value and being punitive. External audits are conducted annually as per instruction from Management. Standard general controls and risks for IT are checked using a 'tick box approach' with no business process context understanding. This interaction and differences in objectives do not foster a context creating culture and lead to differences in perceptions.

6.4.5 Objective 5

Distinguish between the different perceptions of the internal stakeholders when conducting IT audits and implementing IT Governance.

T5: IT-Integrated Context Creation Culture

See 6.4.4 above.

6.4.6 Objective 6

Examine how shared context understanding can be improved among various internal stakeholders using the AI Audit System, and determine what constitutes context awareness for an AI Audit System. Furthermore, investigate how shared context understanding using ML techniques can improve business processes.

T6: Context-aware System creates Proactive Management

A system using AI and ML techniques could be used as a proactive management system to address the controls that improve business processes. Applying context to a system that is able to maintain and build historical, institutional, and business process context provides all stakeholders with a continuous proactive management system and adds value in terms of more efficient and effective audits.

6.5 Recommendations

The following recommendations are made after considering all the findings and discussing the themes:

i. CA and a shared common context understanding take time to achieve, therefore Audit partners and Senior Management need to invest time and effort in understanding the business processes of the entity related to audit and implementation.

ii. Conduct context creation workshops with all stakeholders, including Senior Audit, IT, and Finance Management, in order to create a clear understanding of business processes for audits and other IT Governance implementations. These workshops need to articulate business processes clearly and walk through the audit processes (internal and/or external) in detail. The risks and controls must be explained and matched to ensure that unnecessary work is not done, and that audits and governance work become efficient. These workshops should preferably be conducted before audit or implementations in order to align the audit objectives with the risks of the business and to create synergy terms of audit interests.

iii. External Audit needs to work with Internal Audit to create a continuous audit environment coupled with systems and ML predictions in order to seek controls (proactively) for real business risks.

iv. External Audit should invest in establishing and maintaining a working, mutual relationship and communication system, with a database of business processes for clients and engagements. Business, together with Audit, need to ensure consistent and constant communication and involvement throughout the year, not only during engagements or implementations.

v. A direct correlation between the CIO (at Exco or Board level) and Business-IT alignment is needed. This in turns means improved business context and business process understanding for auditors.

The following additional AI Audit System (ALICE) recommendations are made after considering all findings and discussing the themes:

i. Systems using AI and ML techniques need to be developed by auditors and partners in order to improve retaining and storing historical context. An AI system such ALICE should be able, through the Internet and connections, to retain context and report on a business's context faster and in a much more informed, understanding way.

ii. Specific ALICE findings and summary findings indicate that ALICE and similar systems must be able to obtain context automatically and receive

context manually. This context creation must be targeted during the planning phase of auditing and governance implementation. This is support by Lowe et al. (2017) (section 2.2.6).

iii. Cyber security, corporate compliance regulation, and business continuity remain the highest priority for contextualising risks.

iv. Referring to (section 6.5 iv) above, future AI systems such as ALICE are needed to retain and provide a database of business process diagrams together with the processes context views. The idea stems from Enterprise Architecture where business processes are illustrated within the different viewpoints, thereby showing the different contexts of each process (APQC.org, 2019).

v. It is also evident from the responses that context aware systems of the future such as ALICE should explain context in various ways.

6.6 Limitations

This study explored the value of CA within IT Audit and Governance. It does not measure the actual cost or savings of context and implementations.

The study used purposive sampling to collect the data; it therefore lacks important demographics such as age and gender associated with the other sampling methods.

The research is a case study and is therefore limited to the Group where the study was conducted. However, results from the case study can be generalised to include the rest of South Africa (but not other countries) because of the same legislation, context, and political history.

This research did not include a psychological study of understanding people and entities, context or background, nor did the researcher include the intricacies of financial auditing and accounting.

6.7 Further research

Further studies are encouraged to develop a cognitive CA model for IT Audit and Governance.

Perform a study to explore external auditor performance after an AI auditing system is implemented and used by the external auditors in order to determine the monetary and time saving as well as efficiencies gained.

6.8 Reflection on the study

Audit, IT, and life in general as we know it today will change with concepts such as Artificial Intelligence machines or robots. My goal from the beginning of the study was, and still is, to work towards a Doctoral study in which I develop a cognitive thinking model of IT audits. This primarily concerns the continuous context changes that Business and IT departments face. To reach my goal, the journey first had to pass through proving the value of CA, which was the aim of this Master's study.

The literature was reviewed using books, articles, journals, research papers, conference material, theses, and Internet sources. Data were collected using semi-structured interviews. The participants were briefed and well educated on the purpose of the study and my journey, which improved the quality of the data. The participants included Middle to Senior Management within their respective stakeholder groups, with good levels of experience, again improving the data quality of the responses. The data were analysed using thematic analysis.

The themes were discussed and recommendations were made in order to align the findings with the theory. Further research is available to other researchers who are interested in the subject to expand on what has already been done in the field.

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APPENDIX A: AUTHORISATION AND CONSENT FOR RESEARCH

THE BIDVEST GROUP LIMITED
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13 August 2018

Attention: Dr A de la Harpe

Cape Peninsula University Of Technology

Dear Sir,

Authorisation for Research within the Bidvest Group

This letter serves as confirmation that Bidvest Advisory Services (Pty) Ltd is the legal entity housing the Intellectual Property of Bidvest ALICE.

In order for Mr Theo Le Roux to conduct the required unit testing for his Masters we understand that Mr Le Roux will require access to our product, Bidvest ALICE, together with individuals in the Bidvest Group. We have agreed to allow Mr Le Roux access to participants from the IT Audit and Governance implementations, namely Business, Audit-Risk and the IT Department of the companies within the Bidvest Group for the purposes of interviews in the last quarter of 2018.

Should you require any further information please do not hesitate to contact myself, Lauren Berringon at laurenb@bidvest.co.za

Yours sincerely,

Lauren Berrington

Chief Audit Executive of the Bidvest Group

Registration no. 1946/021180/06

APPENDIX B: RESEARCH PARTICIPANT CONSENT FORM AND INTERVIEW GUIDE

Cape Peninsula University of Technology

RESEARCH PARTICIPANT CONSENT FORM & INTERVIEW GUIDE

WHAT IS THE PURPOSE OF THIS STUDY?

The **aim of the study** is to explore the value of context awareness within IT Audit and Governance implementations, to identify the value of shared context understanding.

A shared common understanding between all the internal stakeholders within IT Audit and Governance implementations remains an important factor. This "context awareness" is between the internal stakeholders within such implementations, namely the business itself, Audit and Risk functions and IT Departments.

Data collection will be done by means of interviews with semi-structured questionnaires using an interview guide as provided below. This research will make use of qualitative data analysis techniques.

All terms used within the questions will be explained by the researcher to the interviewees before commencement of the questions. The researcher is aware of the ethics related to the potential stakeholders in the research and will ensure that the research is conducted ethically.

WHO IS DOING THE STUDY?

T Le Roux is currently conducting post graduate research from the Cape Peninsula University of Technology (CPUT) into the concept of the ***"Value of Context Awareness within IT Audit and Governance implementations"*** and will be interviewing identified individuals within the Bidvest Group between October 2018 and January 2019.

WHO IS BEING ASKED TO PARTICIPATE?

Various selected management members of IT, Finance and Audit of various businesses within multi-national companies.

YOUR RIGHTS AS A RESEARCH PARTICIPANT?

Participation in this study is completely ***voluntary and anonymous***. Information gathered during the research will be used solely for the purpose of this study and all efforts will be made to ensure the confidentiality of participants' personal information. ***Please note that while your name will be recorded with the data, it will not be used in the report.*** All identifiable data will be stored securely on a computer with security-enabled-restricted access and only the researcher (and supervisor if applicable), and ethics committee members will have access to it. All identifiable information will be destroyed at the end of the study or after 15 years, whichever comes first.

If you decide not to participate there will not be any negative consequences. Please be aware that if you decide to participate, you may withdraw from the study at any time and your data will be returned to you or destroyed. You may also decide not to answer any specific question.

WHAT WILL HAPPEN TO THE RESULTS OF THE STUDY?

All information will be handled confidentially. The transcripts of the interview will be presented to the participants\interviewees for verification. The results of the research will at all times, will be presented firstly to the university and businesses. The results of the research will be anonymised and will not be

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disclosed for public consumption without the explicit consent of all parties, the university and businesses involved.

CONSENT TO TAKE PART IN RESEARCH

I…… voluntarily agree to participate in this research study.

1. I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.

2. I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.

3. I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.

4. I understand that participation involves being interviewed for questions that was provided in advance.

5. I understand that I will not benefit directly from participating in this research.

6. I agree to my interview being audio-recorded. This is only for transcribing purposes.

7. I understand that all information I provide for this study will be treated confidentially.

8. I understand that in any report on the results of this research my identity will remain anonymous. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.

9. I understand that disguised extracts from my interview may be quoted in the dissertation and research of CPUT.

10. I understand that if I inform the researcher that myself or someone else is at risk of harm they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.

11. I understand that signed consent forms and original audio recordings will be retained in [specify location, security arrangements and who has access to data] until [specific relevant period – for students this will be until the exam board confirms the results of their dissertation].

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12. I understand that a transcript of my interview in which all identifying information has been removed will be retained for [specific relevant period – for students this will be two years from the date of the exam board].

13. I understand that under freedom of information legalisation I am entitled to access the information I have provided at any time while it is in storage as specified above.

14. I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Researcher	Supervisor
Theo Le Roux 656 Vincent Str Moreleta Park Pretoria 076 521 1296 theo.leroux@premierfmcg.com theo.leroux@gmail.com	Dr Andre de la Harpe Cape Peninsula University of Technology 021 460 3627 082 448 1058 PO Box 1906 Bellville 7535 andre@cenera.com DelaHarpeA@cput.ac.za

Signature of research participant

---------- ----------

Signature of participant ***Date***

Signature of researcher

I believe the participant is giving informed consent to participate in this study.

---------- ----------

Signature of researcher ***Date***

BACKGROUND AND EXPLANATION

T Le Roux is currently conducting post graduate research from the Cape Peninsula University of Technology (CPUT) into the concept of the ***"Value of Context Awareness within IT Audit and Governance implementations"*** and will be interviewing identified individuals within the Bidvest Group between October 2018 and January 2019.

A shared common understanding between all the internal stakeholders within IT Audit and Governance implementations remains an important factor. This "context awareness" is between the internal stakeholders within such implementations, namely the business itself, Audit and Risk functions and IT Departments.

This **research problem statement** is that there is a lack of a shared context understanding of all stakeholders when conducting IT Audits and Governance. An awareness of the context of the entity, IT department within the entity for a given time. To answer the research questions a case study research strategy will be followed using the Bidvest Group of companies.

The **aim of the study** is to explore the value of context awareness within IT Audit and Governance implementations, to identify the value of shared context understanding.

Data collection will be done by means of interviews with semi-structured questionnaires using an interview guide as provided below. This research will make use of qualitative data analysis techniques.

All terms used within the questions will be explained by the researcher to the interviewees before commencement of the questions. The researcher is aware of the ethics related to the potential stakeholders in the research and will ensure that the research is conducted ethically.

APPENDIX C: INTERVIEW GUIDE TEMPLATE

BACKGROUND AND EXPLANATION

T Le Roux is currently conducting postgraduate research from the Cape Peninsula University of Technology (CPUT) into the concept of the ***"Value of Context Awareness within IT Audit and Governance"*** and will be interviewing identified individuals within the Group between October 2018 and January 2019.

A shared common understanding between all the internal stakeholders within IT Audit and Governance remains an important factor. This "context awareness" is between the internal stakeholders within such implementations, namely the business itself, Audit and Risk functions, and IT departments.

This **research problem statement** is that there is a lack of shared context awareness among all stakeholders when conducting IT audits and implementing IT Governance. To answer the research questions a case study research strategy will be followed within the Group.

The **aim of the study** is to explore the value of context awareness within IT Audit and Governance to identify the value of shared context understanding.

Data collection will be done by means of interviews with semi-structured questionnaires using an interview guide as provided below. This research will make use of qualitative data analysis techniques.

All terms used in the questions will be explained by the researcher to the interviewees before commencement of the questions. The researcher is aware of the ethics related to the potential stakeholders in the research and will ensure that the research is conducted ethically.

RESEARCH QUESTIONS

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

IQ3: *How important is an understanding of the business to you?*

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

IQ5: What would you define as IT-Business alignment and why would you think it is important?

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

IQ19*:* *In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. Corporate identity and context
c. Organisation and IT strategy alignment
d. Financial context and understanding
e. Time and historical context
f. Corporate Governance of IT context
g. Information / cyber security context
h. Risk context and appetite
i. Technology context, trends and analysis
j. Audit context – audit obligations / regulations
k. Information / insight requirements context

IQ20: *In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?*

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

APPENDIX D: EXAMPLE OF AN VALIDATION FROM ONE PARTICIPANT

Theo le Roux

From: Hussein Mangera <HusseinM@kmsa.com>
Sent: Thursday, 31 January 2019 08:44
To: Theo le Roux; Mohamed Suliman
Cc: Lauren Berrington
Subject: RE: Interview transcription

Hi Theo,

Thanks and compliments to you too.

We are satisfied with the transcript and there are no changes.

Kind regards,

Hussein Mangera
C.I.O

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From: Theo le Roux [mailto:Theo.leRoux@PremierFMCG.com]
Sent: Tuesday, 29 January 2019 19:57
To: Hussein Mangera; Mohamed Suliman
Cc: Lauren Berrington
Subject: Interview transcription

Morning sirs,

Firstly complements for the new year and all my blessings for the new year at work and home.

Please find attached our interview transcription from 24 Oct 2018, for your verification. Again, thank you indeed for your participation and support for not only my studies, but also Alice.

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APPENDIX E1: INTERVIEW ANSWERS OF PARTICIPANT 1

AUDIT AND RISK STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

An Internal Audit Manager for a manufacturing business of the Group, responsible for financial audit and risk control. The context within this business can be described as the nature of the business within my role. What we do and how we do it. This includes the operations of the business. Understanding the nature of the business's operations is important for context. This will entice an understanding of the risk of the business processes and operations in order to understand the internal or external audit requirements.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

A similar understanding of the business, its operations, and risks; it includes all aspects of the business.

IQ3: *How important is an understanding of the business to you?*

100% important and it is core to identify risks. One cannot identify risks if one does not understand all aspects of the business.
Not formal, but a lot of time is spent on understanding the business.

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

Factors that I think contribute to my understanding when conducting audits:

- Time spent on the audit with business
- Observation of the business
- Audit procedures and control tests understanding
- Discussions and feedback with Management
- *Vice versa* communication improvement between Audit and Management
- Constant and consistent communication and feedback

IQ5: What would you define as IT-Business alignment and why would you think it is important?

IT needs to work for the business and not against the business. The reliance of the business on IT to ensure day-to-day running of IT systems is important. It must be something that just works with minimal monitoring and inputs. The business must satisfy that the IT security controls in place do indeed protect the business from security and cyber threats.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

The following challenges were mentioned:

- From an internal audit perspective, not being able to identify risks (consequence)
- Lack of experience by the auditor breaks down the shared understanding
- Time pressures of the audit to be completed
- Management receptiveness to audit
- Lack of communication

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

These challenges can be overcome by:

- Having more experience as an auditor
- More allocated time to complete audits
- Support from Management
- Improved audit planning

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes, Management thinks or has a perception that their processes and controls work; auditors think it does not. The perceptions differ because I think Management is subjective, because they work within the business on daily basis, they think controls are sufficed; but as auditors we are objective, start off with a professional scepticism and will not take something on face value.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

The following creates different perceptions:

- Complacency by Management
- Professional scepticism, as auditors we trust no one and Management trusts
- High level view vs. detailed view of management

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

A notice to Management is provided followed by a pre-audit general discussion. This entails a high-level look at the focus areas of the audit. Not the controls but the areas of the controls. Audit is determined according to the audit plan and group divisional risk indicators. The understanding by the auditors of the business is not well documented, if any. This understanding is not considered for the next audit. Prior understanding is not documented. Briefing and context understanding is conducted as the audit manager to the audit team. The business's risk appetite is considered, monetary as well as direct and indirect exposure to certain risks in order to understand context. As Internal Audit, nothing is excluded in the beginning and thus no materiality figure exists. The final part of this interaction includes discussions around the findings and reports where arguments for and against the findings are debated. The final report will include conclusions.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

- Not sure what, but there can be improvements

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

Reference IQ8. Business Management has a perception that their processes and controls work; auditors think it does not. The perceptions differ because I think Management is subjective, because they work within the business on daily basis, they think controls are sufficed; in short, subjectivity and objectivity.

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

There are different perceptions for each entity, and there is a difference between Audit's perception and Management's. Auditors' perception of the effectiveness of the control is normally worse than Management. This is shaped by:

- Factual and proven prior knowledge of auditors
- Auditor perceptions about risks are seen with higher impact and more likelihood of happening on the business than business

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

More optimistic perception than the auditors' pessimistic perception. The Business stakeholder normally evaluates risks lower than auditors; thus, the perception of the risks is less risky.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

IT has a different perception than Business and Audit. IT is normally only IT focused, and not operational. IT's perception is also optimistic.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

ALICE is seen as a potential financial auditor and system to use. ALICE can understand context better in the following ways:

- Experience, in the beginning context will not be understood and will have to be provided
- Through identification of all possibilities
- Self-learning
- Context understanding creation before the audit happens in order to facilitate audit by exception, true exceptions rather than "false positives". This will ensure time is saved

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

The following benefits can be gained from a context understood system like ALICE:

- Time saving benefit
- Costs
- Risk-based auditing focussed on exception
- Opportunities for other focus auditing work are created in that audit takes lesser time

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

- True exceptions
- Narrowed focus on the real business risks
- Efficiencies and improved audit effectiveness according to the company's Audit Charter
- Patterns in controls and improved root cause analysis of problems and issues
- Comparison and benchmark insights and information

IQ19*:* *In your opinion, what would you rate as the most important context ALICE could have?*

a. 3 Perspective and situational context
b. Corporate identity and context
c. Organisation and IT strategy alignment
d. 4 Financial context and understanding
e. 2 Time and historical context
f. Corporate Governance of IT context
g. Information / cyber security context
h. 1 Risk context and appetite
i. Technology context, trends and analysis
j. Audit context – audit obligations / regulations
k. Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

- Learning and improved business understanding
- Learning from other businesses within the Group in order to understand controls in context
- Linking different but previous situations
- Out of the box thinking by the system in order to verify controls and risks
- Explanation of context of risks

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- As a start to be described manually and only once-off; both

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

- Controls and root cause analysis data

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

If the system is able to metric than yes, as not all context is "metricable", e.g. an explanation about anomalies of certain risk controls. Explanation and description of risks.

APPENDIX E2: INTERVIEW ANSWERS OF PARTICIPANT 2

IT STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

For me context would be an understanding of our business model. How do we as a business make money, and how do we deliver a service? This will stem further an understanding of… because of this business model… this or that will be done in a certain way. How IT is done because of the business model and within the business.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

It is an understanding where the business is coming from in order for them to have the same understanding how that is impacted and implemented. It is a true understanding where the other parties are coming from and why it is asked or checked. It is a sense of the "why". The shared context can be different levels and it is about understanding the why in the context of the other party.

IQ3: *How important is an understanding of the business to you?*

Very important, if IT does not understand the business and the requirement, how is IT going to deliver on that requirement? This means misalignment if the context of the business is not understood. Understanding the business is important because it enables a comprehension of the priorities of the business, people, stakeholders, and customers.

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

- An awareness where the other party is coming from
- Time spent with the different role players before the audit implementations
- Responding to the time spend and providing feedback
- Immergence
- Personality and culture of the role stakeholders

IQ5: What would you define as IT-Business alignment and why would you think it is important?

IT needs to implement the strategy of the business, and in doing so, certain objectives of the business IT needs to be aligned to and/or implement, broken down into smaller components. Alignment means understanding and implementing the business vision, mission, objectives, and performance measures in every aspect of IT. It is about creating IT objectives and performance contracts from these business objectives.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

Not spending time on and with the implementations, coupled with awareness and openness to understand.

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

Audit approach with an understanding to provide:

- Culture of the organisation to understand the business and the reasons why controls are checked and audited
- From all stakeholders a "willingness to learn from" and a genuine interest
- An audit and process improvement culture

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes, culture, background, personality, audit objective, and faultfinding or "policeman" mentality. It is about how to get them to understand and for them to understand why.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

Yes, culture, background, personality, audit objective and faultfinding or "policeman" mentality. It is about how to get them to understand and for them to understand why.

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

Annually once, External Audit, Exco through CFO provides instruction and direction. Not much business involvement and a lot of interaction within the audit process.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

- Through awareness and feedback

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

Because of culture, background, personality, audit objective, and faultfinding or "policeman" mentality.

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

From a security audit perspective:

- Audit's perception is sceptical and prescriptive
- Concerned about security, directed by the CEO
- Informed
- The perception is that they as auditors have to find something

The perception is shaped by cautious honesty and feedback. Auditors' perception is truly shaped by their genuine interest in the context of our business.

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

Business perception is that we as IT are managing audits, we are aware of it and working on it.
Interested in the communication part of it and not necessarily the details.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

Almost like "here we go again" but also a feeling of how can and what can we learn from audit.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

By piking-up and understand four key areas of the business in IT through data connections and assumptions about Business and IT. Through inferences drawn from interactions and feedback received. Learning from interaction with users and making safe assumptions about the context of IT.

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

- To understand typical behaviours and assumptions
- To understand normal patterns of behaviour in order to end up with predictions
- Predictions about audit findings, predictions about risks, controls and advance and continuous management
- Benchmarking data about the Group, divisions, industry and other external businesses

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

- Insights in order to improve business efficiencies, and insights into productivity and effectiveness
- Insights to show trending and the context about the insights

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. Corporate identity and context
c. Organisation and IT strategy alignment
d. Financial context and understanding
e. Time and historical context
f. 3 Corporate Governance of IT context
g. 1 Information / cyber security context
h. Risk context and appetite
i. Technology context, trends and analysis
j. 2 Audit context – audit obligations / regulations
k. Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

- Machine Learning techniques
- Through connectors and software licence
- Trust between systems for information is an important consideration

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- Both

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

Historical data and information to influence the business context and prevent rework and improve efficiencies and save time. This can only come through an audit system that is "living in the business" and experiencing the business. A grasp of the business's risk appetite and sense of how risk adverse key individuals are in the business.

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

Both, it is important to understand what to do next or about it. In combination of decryption and rating in order for the audience understand the story, there is always a background and story to create a context understanding.

APPENDIX E3: INTERVIEW ANSWERS OF PARTICIPANT 3

IT STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

The breadth and scope of the IT landscape within the understanding of the business how. It is about "operationalising" IT risks within the business. The context of this business is a wholesale and retail business, the owner of some brands and agents for others, the ability to innovate on some brands and others not.
It is the understanding of the type of business, the context of the business risks at a given point in time and the context of personalities within the business. The real context is also the insights information could potentially provide to enhance sales understanding and analysis for the business.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

Summarised as: "Is there an agreement of minds, between the three stakeholders (Business, Audit, and IT) when it comes to IT audits and Governance implementations?" There is alignment between IT and Audit but not Business. This is due to business not always comprehending the true impact and risks relating to information technology and information security.
External audit is only a sample view with a limited financial scope and not the spectrum of IT risks comprehension.

IQ3: *How important is an understanding of the business to you?*

- Very important and crucial without a doubt

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

The following factors improve the understanding between IT and Business:

- Senior level awareness and technology excitement and understanding
- Buy-in: walking the walk and not just talking the talk
- Organisational structure
- The way in which Business is measured, key performance indicators

IQ5: What would you define as IT-Business alignment and why would you think it is important?

IT within this business is not represented on the Exco (Executive Committee) creating misalignment. Business-IT alignment is defined in today's world as Business and Management's digital maturity. If IT has a high priority of the Board or Exco's agenda, if IT is positioned correctly in the organisation, it will be aligned.
As for External Audit, their alignment is very important, and they should be incorporated and form part of the team. Internal Audit or "compliance guardians" should fully understand the business capability model and own compliance and provide guidance to the whole business.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

The external and internal auditing mentality of faultfinding or a traffic cop approach. This creates a counterproductive and counter-processes improvement response from auditees. Audit is always seen as identifying faults and not helping and assisting. This ends up doing more harm than creating a shared understanding. Audit and especially External Audit are seen as finding something wrong because they have to and for the sake of finding something.

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

Some of the challenges:

- All's understanding of digitisation, infrastructure and the breadth of information security
- IT is not prioritised high enough on the business and audit agenda
- IT is only seen by business as a disruptive supportive organisation and not an enabler for business and audit

This can be overcome with digital transformation, defined as radical thinking using radical technology to improve or enhance current business processes. Digital transformation is enabled by business and not the IT of the business. It is about the people, culture and processes and not the technology, the "human transformation".

To create clarity (shared understanding) in all aspects of business including Audit, IT needs to be the broker in digital transformation to provide the answers to the questions they have not thought of yet. In order to do this, radical Senior Management thinking change is needed. It should not be aligned to business; IT is business and should be part of business in true digital transformation.

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes, perceptions differ because of backgrounds and audit scope and audit mentality. Audit wants to find something for the sake of it and misses their value proposition. Business and IT want to get it done.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

Backgrounds and audit mentality forming the main reasons for different perceptions.

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

No interaction between the stakeholders. External audit is done via an instruction from Business and Management with no or limited involvement from IT in terms of planning for the audit.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

- Through improved communication, positioning, and similar shared objectives to improve business

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

- Refer to IQ8 above

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

External Audit and Audit have the wrong understanding of their value proposition. They follow a checkbox approach and after the fact without planning. The External Audit partner used their predesigned toolset for auditing certain IT controls. Following a tick box approach, the validity of the information is not verified.

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

Business perception was to get it done as soon as possible, with limited involvement into the IT audit process. As CIO of the business, the Audit report was not seen before it was disclosed to Business and Management. This perception can and will be shaped by the position of IT and Audit on the executive committees of the business.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

They as Audit are there help me understand the risks. External Audit never provides the actual value as they are neither qualified (also known as context comprehension), quantified nor have the business awareness to audit the risks of the environment and business.

It is about helping me with the following four pillars:

1. Reducing my risks
2. Improving my costs
3. Maximising strategy delivery
4. Creating efficient and effective operations

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

The following things excite me about ALICE and the ability of a system to understand and present context better:

- Operationalise IT risk and IT service management for IT management
- Context output of such a system will need to be designed to enable the improved management of IT service and skills performance
- Business and digital risk maturity
- The value of such a system understanding context is that it can be used more than just a filing system, but as a proactive management system
- It will provide the capability of seeing, measuring many things simultaneously. The capability of information (insights) gathering and centralising information in order to make improved decisions
- From a tech perspective, ALICE can understand the business connections, map the branches, the quantity flow, information flows between branches and business units
- Safe assumptions that systems of this nature can make based on build-up business history and context in order to save time

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

- Understanding the business risk, having a platform to manage and mitigate that risks
- Insights into the IT infrastructure with populating a configuration management database
- Understanding and illustrating business flows with their impacts
- Information in order for me as Management to start asking questions
- A benefit of ALICE is necessarily time savings and costs but rather the potential insights and management of services

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

The following potential insights could be beneficial:

- Missed business opportunities
- Insights to enable more questions and analysis
- Exception based management insights and reports
- Benchmarking info as if the business is still starting up
- Trends analysis and comparison information in order to provide real business value for decision making

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

a. **1 Perspective and situational context**
b. Corporate identity and context
c. **4 Organisation and IT strategy alignment**
d. Financial context and understanding
e. Time and historical context
f. Corporate Governance of IT context
g. Information / cyber security context
h. **2 Risk context and appetite**
i. Technology context, trends and analysis
j. Audit context – audit obligations / regulations
k. **3 Information / insight requirements context**

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

- Communication and information presenting, using techniques in order to assist Management to understand the business risks
- Radical technology ideas; refer to IQ16 above

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- Both

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

- Geographic and geospatial differences and insights in order to make improved decisions

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

- Both, especially benchmark information

APPENDIX E4: INTERVIEW ANSWERS OF PARTICIPANT 4

MANAGEMENT & FINANCE STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

In my mind, it is about that audit and anyone precisely understands what the business does, how it does it, and where the risks are. It is about knowledge of the business to easily and accurately identify threats, risks, manipulation, and potential fraud.
It is about knowledge and applying the accounting standards within the raw business processes, systems, and practices the business have in place to make money. It is about this understanding in order to evaluate the effectiveness of controls within these processes and systems.
Context also differs for the business within the business units and departments. This is because the risks differ.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

Understanding the following things in a similar way:

- The application of the accounting standards
- Interpretation of standards
- Disparate opinions of applying the standards into the business
- Business operations and what they actually do

IQ3: *How important is an understanding of the business to you?*

Very important because it is about details in order to truly identify and mitigate the risks.

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

- Communication, documentation, and asking the right questions

IQ5: What would you define as IT-Business alignment and why would you think it is important?

The ability of IT to provide information to the business at the right time and to the right decision maker, the way in which IT can provide "drill-down" or more and more detail about the information provided in order for business to measure performance. Aligned and integrated within business in order to protect the information assets of the business and to provide answers to questions we as business have not asked yet.
Many opportunities and risks will be missed if IT and Audit does not understand the intricacies of the business.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

When Audit is seen as not adding value anymore and is fruitless. That time when the actual audit processes of querying controls is not done effective and efficient anymore. When the process does not add value. If a “blanket vanilla” audit approach for each business is used and the “default process” is always followed; when the regulatory environment constraints the audit process.

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

Reference other, older and or previous audits in order to create an historic “context” of the business. These challenges can also be overcome with improved Internal Audit team communication.

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

External Audit’s perception is normally about accuracy and validity of the information. A perception of not enough controls. It would differ because of a lack of business operational understanding. Example findings and recommendations may be valid but not all practical in the business.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

Because of what they do, how audit is done, and if audit is done from a zero base.

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

The External Audit partner is engaged with annually, in a meeting with the Financial Director, high-level meeting, discussing the direction and plan for the year’s audit. The process kicks off with a formal request for financial information and reports, followed by *ad hoc* requests that are received. Reports, flags, concerns, and alerts are discussed throughout with Management. The process of external audit normally takes around a month.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

If Audit provides historical context and information. Why does Audit and especially External Audit always start from a zero base? Audit and Business need to be positive and have a productive mindset with mutual understanding and mutual business understanding. Interactions can be improved by providing mutual trust to other parties (the psychology of trust).
With mutual improved information sharing and context understanding by the stakeholders, auditors and business will both benefit from the improved trust.

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

- Refer to IQ8

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

- Perception that business is not in control

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

Internal Audit should be there to improve process and add value, External Audit should only verify these improvements and obtain historical context. External Audit can benefit for the internal audit results and information and efficiencies can be gained from the "re-use" of these information.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

- Not sure, not that much experience in this field

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

Data analysis but not necessarily the financial and data analysis. If a system like ALICE talks to individual expectations and is trusted with the information. If a system like ALICE understands the business and the process parameters.

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

Expected results of the information will enable trust overtime. Mundane bank payments release could be automated. A system that is able to understand the risks and be able to extract data and enable exception financial management. The benefit to my direct environment is time saving.

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

- Different perspectives and insights into what would be exceptions and norms and standards

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. Corporate identity and context
c. Organisation and IT strategy alignment
d. 1 Financial context and understanding
e. 3 Time and historical context
f. Corporate Governance of IT context
g. Information / cyber security context
h. 2 Risk context and appetite
i. Technology context, trends and analysis
j. **4 Audit context – audit obligations / regulations**
k. Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

Reference to historical information and findings in order to create a perception of what is and what is not acceptable.

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- Both, if it is possible

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

Financial data, how material and how comfortable the information displayed makes the analyst. Also, cross checking of risks across the Group and between similar businesses in order to be more proactive. This creates a warning in order to be proactive controls in place.

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

- Both

APPENDIX E5: INTERVIEW ANSWERS OF PARTICIPANT 5

AUDIT AND RISK STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

Three to four years ago, we were concerned that the audit of the future is not going to be the audit of today. Audit in its entirety needs to change, and the change is cardinal to business with two focus areas or targeted elements (Continuous Combined Assurance) explained by the following:

- Efficiencies and costs savings, audit has not been historically the focus of cost reductions and efficiencies. Although this is outside the business control, we as the auditors can still push the audit profession for improved productivity
- Away from the old-fashioned "tick-and-bash" approach
- Internal audit process whilst not losing it, abandoning its different role and mandate, could be relied upon by the external audit and "usable" in order to obtain efficiencies through combined assurance
- Audit does not deliver what Management wants, Management rather than the shareholder. If audit like it is now, an annual once-off snapshot of the balance sheet, old when it is viewed. With regard to the income statement, a regular objective and outside opinion is needed

The only way in which Continuous-Combined Assurance will be obtained is digitally through advanced data processing techniques. It has to include exception reporting, trend analysis in order to identify aberrations.

The most critical question we would have to ask is "what would we like to achieve in 10 years by the audit (2028)?" How will and must the audit look in 10 years from now? The current trend and modus of auditing is not efficient and cost effective.

If you do not understand the business, then you only have the figures, and also what stands behind it and drives it. It is not an efficient audit and without any insights. It becomes retrospective if you have no contextual understanding about the business.

Audit's job is not only to verify the history, it needs to be broader (for example, profit stream and cash availability) and that context is vital to be able to make an intelligent comment on these. This is especially true, and businesses are growing into this global digital connected world into foreign entities. This is not only the trading context, the legal-compliance context, the cash and currencies, governing context etc.

Context within the Group is utterly different. The auditor has to extend the spectrum of the Group's differences. Negative reserving and embedded values are two of many examples an auditor must take into account.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

It becomes retrospective if there is no mutual contextual understanding about the business. Context within the Group is utterly different. The auditor has to extend the spectrum of the Group's differences. Each business within the Group needs to understand the auditor's context application on the business similarly, and if IT is involved, the need to understand the business and audit milieu. Advance context setting audit training is needed.

IQ3: *How important is an understanding of the business to you?*

- Crucial, see IQ1

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

- Mutual understanding and communication

IQ5: What would you define as IT-Business alignment and why would you think it is important?

A lot of Management struggle to make the mental shift that IT is not only the enabler for business, but should also be the catalyst for business growth and enable value to the business, a mining opportunity. True value of IT lies in the way in which IT can bridge the gap between information and knowledge and turn this knowledge into action.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

- No response was provided

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

Being that the operating entities or businesses being assessed are unique, one would safely assume that the processes would differ. A technology-integrated culture is needed. This also means that a huge amount of training is needed within all facets of the business. Not only in the IT and Finance departments but also in Marketing, Sales, and Operations, and all need to be more IT aware and trained.

This is especially true if you would want the audit function to become more proactive and continuous.

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes, what does External Audit contribute to Management? If a business has a strong internal risk-based audit function and plan, there is action plans with aggressive timelines to address classified risks, and Management knows what controls is needed, what value can an external audit function add?

In an aligned business, IT-Business and Internal Audit are all working towards the similar goal of improving controls to improve the value of business. External Audit has a different perception because they have a different goal or purpose towards shareholders and not Management.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

- See IQ8 above
- Additionally, External Audit is concerned with an annual once-off business opinion rather than Management's requirement for a continuous business assessment

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

Group CFO, Executive Internal Audit, and the individual Audit Committee Chairpersons will meet with the external auditors and based on the auditor's presence in the quarterly audit meetings collectively, the Group will identify the areas of concern and focus for the audit.
This then is imposed on the different divisions of the business. Individual businesses can add audit areas, but not change. IT is unfortunately seen or remembered in the end as a "by-the-way" quick check and tick box exercise.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

Positive contributions from Management towards the audit by adding focus but not subtracting from it. Audit and especially External Audit's ability to accept management focus areas, concerns, and controls.
One of the less acknowledged factors is personality fit of an auditor. The auditing concept is a confrontational relationship with the potential for conflict and abrasiveness. Auditors need to be pragmatic and it is important to be relational throughout the process. Auditors need to be relational.

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

- See IQ8
- Their aim in the audit shapes their perception of the world and business. Each business within the Group is owed in the same way as each stakeholder is owned and from own interest

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

External Audit has a different objective and interest. Audit agrees that the Group controls the Group through strict accounting controls and standards. External Audit sees the Group as a dynamic group that is difficult to manage and unusual. Because of the Group's model, a bottom-up approach change is needed in order to employ and thus understand the business from the bottom up. Senior experience auditing is needed at lower level.
If you want to understand context as an auditor for this group, you have to fully comprehend and understand context of the vastly different businesses at root (operational) level.

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

The Group's business model of Management buy-in and trust is liberating. In a business model of this Group, there are advances and disadvantages. One of the disadvantages is dependency on great, effective, and efficient Management and their ability to lead. The ability to fit into the culture. Management is very seldom changed after an acquisition.
The Group is essentially a "services" business and that means there are not investments, essentially a trading business. The principle measure of performance is "ROFE" (Return on Funds Employed).

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

IT for the Group is strong and varies from division and business, but in general, IT for the Group is good and effective within audits and in general.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

External Audit is reluctant to use the AI system and rely on the ALICE audit. There needs to be a shift from output (tick-and-bash) auditing to input auditing. If what goes in is correct and if the system is correct and the processing, one does not need to verify everything.
ALICE as a machine learning entity rather than Artificial Intelligence system could understand context better in the following ways:

- Human understanding and contextual awareness fed into ALICE, and this awareness needs to be appropriate at any given point in time for her use to make sense at any given point in time

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

- Having the correct input into ALICE in that she knows what to look for and in which ways to report these to whom

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

One management application ALICE could employ is that ALICE needs to incorporate an ethical hacking capability and provide to Management the proactive ability to identify cyber vulnerabilities, risks, and controls.

- Proactive financial management heads-up's and marketing presence insights and alerts
- Trends, financial problems, deviation analysis, and different exceptions
- Intuitive financial analysis
- Continuous auditing value
- Careful, comparable benchmarking information within context and on common factors
- Exception and/or deviation analysis

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. Corporate identity and context
c. 4 Organisation and IT strategy alignment
d. 1 Financial context and understanding
e. Time and historical context
f. Corporate Governance of IT context
g. Information / cyber security context
h. 2 Risk context and appetite
i. Technology context, trends and analysis
j. Audit context – audit obligations / regulations
k. 3 Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

- Exception and/or deviation analysis

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

Both – One cannot expect ALICE to have the context if context was not provided to her from an analyst view into the interrogating process. In other words, ALICE needs to be told what to look for, in order to convert information into knowledge for action and decision.

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

Compliance/regulatory context and the controls related to these – project work that shows context, a work in progress, accounting reporting.

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

- Both
- Detail to roll up in clear insightful information to stimulate decision making

APPENDIX E6: INTERVIEW ANSWERS OF PARTICIPANT 6

MANGEMENT & FINANCE STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

It is about what we do and how we do it. The company's context is about vehicle retail and vehicle rental with a decentralised business model. Every employee should be "running" their own business. Core to this business is an incentivised business model at all levels. Having said that, the only thing that remains central is the systems of the business. This is mainly to ensure economies of scale and information security purposes.

The context of the business sound simple, but each dealership is complex in that it has five different businesses within the dealership. There is no annuity income and margins are at 2%. Costs thus are very critical. Highly regulated and onerous compliance with massive costs to the business. In other words, cost of doing business due to legislation has increased significantly. It is for this reason that an AI Audit System could mitigate the escalating cost of compliance.

Finance functions in its present form will not exist in the future. Skills and the nature of the function especially at lower levels would need to change in finance and audit. People should adopt and adapt to these changes. Lower levels skills in audit, with assistance from Artificial Intelligent systems like ALICE, should not be threatened but embrace the opportunity to grow analytically and understand businesses.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

It is not only Business and Audit as stakeholder, IT almost overlays or spans across multiple functions. An understanding of IT and IT's understanding of the business is pervasive in business and crucial. IT must be seen as an overlay to the entire business strategy.

A shared understanding, in an external audit context, is total comprehension of the situation of the business at audit partner or top level. If this is the case, the direction of an audit will then be steered in the right direction and add business value.

Shared context understanding is also having experience or feeling or felt a similar circumstance in which another stakeholder is feeling. As an auditor, putting theory, findings and or accounting into practice.

IQ3: *How important is an understanding of the business to you?*

- Crucial and very important

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

Consistency and regular communication and feedback to all stakeholders in the process.

Inconsistent communication and decision making. Consistency is important in accounting because it begs the question sometimes within audit, is accounting a science or an art?

IQ5: What would you define as IT-Business alignment and why would you think it is important?

IT and marketing functions for the business are combined and the CIO is also the commercial director. Thinking that IT is an enabler and not integrated into the business strategy and as part of the business strategy is archaic. It is important to note that someone at Board level needs to speak information and technology at a Board or Executive Committee level. IT in this business is outsourced since I am of the believe that the propensity of and internal business IT is to become stale with not enough innovative thinking. Business should rely on the IT function and not personality.
Because of the volume, complexity of the transactions makes the business and thus the systems that support the business needs not to be systemic. All transactions in the business are unique and thus not systematic.
IT needs to form the business of the future and all strategic business discussions cannot do with an IT appreciation in some form or another.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

- When the audit party does not communicate effectively and prior to findings

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

- Time with the business and understanding from a top down approach, Audit, Risk, and IT

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes, 100%, they have different perceptions. The stakeholders have different objectives.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

Different objectives and audit mentality. Is there and could there be at any time an alignment of minds within and audit? This is to make money; this in turn points to cost issues that all stakeholders share. It boils down to auditing within less amount of time and adding more value to Management.

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

An introduction meeting with External Audit partner followed by a meeting to plan the audit and the team related. At this planning meeting, risks are discussed; External Audit would ask for updates and risks. Not much and enough homework and preparation work are done by the audit partner. It is important that the audit has a continuous and constant relationship with their clients and business. The report is disclosed before reporting to the Audit and Risk committee.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

Consistency and regular communication and feedback to all stakeholders in the process. As an external audit improves knowledge and business insight, understanding legislation and accounting requirements, time efficiencies (illuminating duplicate work or rework). Facilitating single answers to questions through improved communication and explanations.

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

Because IT people are proud and any audit is perceived as punitive.
IT audit has become more important because of the rising awareness of IT and cyber security and the fact that IT strategic importance on the Board's agenda has substantially improved. The future of IT is also changing, and this all creates different perceptions.

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

- Open business partner relationship and seeing the Group as difficult and complex

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

As the business stakeholder, I am of the opinion that External Audit does not add value to Business and Management. External Audit's value lies within the understanding of the external audit ability to provide more insightful assurance to business.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

IT same as business thinks that findings and reports need to be balanced and contextual. This can only be done through a communication and mutual understanding. Auditor's mentality to add business value to Management and improve processes as well as the CIO's changing sentiment to not see audit as a punitive exercise.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

An internal audit tool like ALICE will be more used, and would have and should have more business/decision improvement applications. To understand context better, ALICE should have an in-depth understanding of the current business, then through historical transactional data analysis and data management, and lastly over time build a predictive capability on future trends. The real value of ALICE lies with the system to provide predictions for decision making.

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

If ALICE is used as an internal auditor, part of the business and part of Management. The cost for such continuous audit and invested is not flowing outside the Group; the cost is not directed at an external audit function. A context understood system is also under management responsibility, understanding risk and managing the vast information.
Audit should be a product out of management implementation to improve the business, within Management's control and context understanding addressing real business controls than an archaic snapshot of business snapshot at a point in time.

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

- Benchmarking and analysis data to show comparison

IQ19*:* *In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. Corporate identity and context
c. 1 Organisation and IT strategy alignment
d. Financial context and understanding
e. Time and historical context
f. Corporate Governance of IT context
g. 2 Information / cyber security context
h. Risk context and appetite
i. 3 Technology context, trends and analysis
j. Audit context – audit obligations / regulations
k. Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

Business Insights in order to improve business decision making. Predictions and exception reporting. However, there is a lot of value still in historical audit value more efficiently done, aimed at assurance for CFO management.
ALICE can easier be implemented as a management tool for exiting minimal control standards in operations – financial example, payslip fraud. ALICE's integration with other systems.

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- Both, it must be a continuous process

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

- Fraud, theft and forensic insights and information because of the nature of the business's assets
- Regulatory and legislation universe

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

- Context, metrics without context is useless and could cause more antagonism

APPENDIX E7: INTERVIEW ANSWERS OF PARTICIPANT 7

AUDIT AND RISK STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

The context of this business is that it is an insurance business as part of the Group. This business context is a short-term insurer, with a number of products:

- A warrantee product
- Corporate products (Group) with re-insurance
- Commercial products targeted at SMEs
- Personal Short-term insurance

Prudential Assurance and a vast regulatory and compliance universe set by the Financial Sector Conduct Authority (FSCA) provide a highly regulated context for this business.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

"I would not like to be an external auditor anymore." The overriding consideration of External Audit is cost of the audit; this is why the limited scope is very well lean resourced and scoped. The days of external audit value add is gone, because one you get sued for it, and secondly not get paid.

Important element to include in shared understanding is the Internal Audit party to ensure combined assurance. Since that, External Audit relies on internal audit work within the business and at outsourced service providers of the business.

A shared context understanding when executing audits is the understanding that External Audit has to satisfy statutory responsibilities, and which ones are these. In fact, they are not allowed to do any other work that the statutory. It is the similar understanding of the same identified or agreed key risks, to the business and Group, between External Audit, Internal Audit, Management, and Systems.

IQ3: *How important is an understanding of the business to you?*

Critical, especially the understanding of the business regulatory environment, channels to market and how these channels are processed.

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

Work reliance of the other stakeholder. Internal Audit is intimately involved with the assessment of the risks and controls and where possible we get ISAE 3402 (International Standard on Assurance Engagements), service organisations, outsourced service providers and brokers. External Audit relies on internal audit work and (ISAE) work done by auditors of the outsourced service provider.

IQ5: What would you define as IT-Business alignment and why would you think it is important?

When IT's business is solely aligned to meeting the requirements of the business. IT's Key Performance Indicators (KPI's) are set to what the needs of the business are. There are enough IT risks featuring on the Risk Committee and currently IT plays a pivotal role is business continuity management and business insights. IT and

technology are key to the future of this business. If you want to be an insurance company in 10 years' time, you have to offer clients and customers a technology solution. How is technology going to benefit the insured? How is the insurer going to assist the insurer with more inflation to help with his/her lifestyle, financial situation, risks and insurance to cover those risks.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

External Audit is under pressure by the following challenges:

- Costs controls specifically relating to human resources
- Near real-time understanding and notice on what's happening
- Time pressures of external auditors to meet the deadline to report

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

Through technology (and specifically the concept of artificial intelligence and the learning aspect), there is no other affordable solution to external audit pressures.

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes. External Audit has a certain and limited mandate, business needs to provide them the information to satisfy them to provide certain assurances (express an opinion), and in some cases, more often than not, IT may be the vehicle to provide this information within the business.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

- The auditor's mandate

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

The external audit process illustrating the interactions: External auditors are reappointed at the shareholder's AGM on recommendation of the Audit Committee. A timetable of the deliverables within the audit plan is agreed to by Business Management. This is followed by a fee and scope agreement. They also consider and need to take into account any material changes to systems, channels, processes, and markets. Historical audits and historical context are considered in this process. It is absolutely critical that continuity of the partner and the Audit Manager remains the same or has some sort of transferal of information.

At the main meeting, the scope of the external audit can be amended if required as result of business changes, acquisitions, new business, for example. When work is completed the Group, pack is signed off. Draft financial 1st audit report is issued followed by and independent meeting between the Audit partner and the Audit Committee to discuss problems or concerns. This is followed by the transaction control work and the asset liability verification.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

- Through communication – the role of the Audit Committee Chairman needs to be determined
- Through improved interaction with the Chairman of the Audit Committee, with prior updates
- Additional to this unrealistic time pressures for audit. The King Code for Corporate Governance should have more teeth and be regulated as compulsory

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

- The mandate of the audit determines a difference in perception at the onset

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

There was planned prior interaction between External and Internal Audit. There was recognition of the work that was done by Internal Audit within the business, and the work completed by the auditors of the outsourced service providers. An audit plan was developed in order for External Audit to issue their audit report for the business. Their focus was mainly around compliance, IRFS, and Insurance Accounting statements within and for the insurance industry. Different perceptions exist because of the unclear role audit (external and/or internal) has.

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

Certain businesses and in certain parts of the business, they do not always see the value of audit.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

Their perception has improved considerably since the work that Internal Audit has been doing in sorting procedures and alerting them to risk areas. Thus, Internal Audit was beneficial for the business in the value they added to IT. External Audit could also be beneficial if they had the mandate and the fee.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

The future of External Audit lies in a system like ALICE, a “smart system” that can address the following three pressures for specifically External Audit:

- Costs controls specifically relating to human resources
- Near real-time understanding and notice on what’s happening
- Time pressures of external auditors to meet the deadline to report

The areas where ALICE can understand context of a business more is through Business Knowledge or Business Intelligence. An example is geographical concentration risks; or how many of the insured have properties within a particular natural disaster-prone area. In other words, context for understanding and providing business insights in order to drive improved business decisions. Inadequacies of the present systems.

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

- Connections and connectors – retrieval software used by and audit firm

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

For internal audit purposes: to identify transactions that fall beyond certain parameters. Outliers and determining risk parameters. Actuarial insights, risk parameters, predictions insights into commercial applications. The bigger use for ALICE is the commercial use of the systems connections in order to drive commercial insights for improved decision making. Another example mentioned is the verification of owned information against other sources, and/or trusted sources of information (Government, Banks, and Bureaus).

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. Corporate identity and context
c. Organisation and IT strategy alignment
d. Financial context and understanding
e. Time and historical context
f. Corporate Governance of IT context
g. 2 Information / cyber security context
h. 1 Risk context and appetite
i. 3 Technology context, trends and analysis
j. 4 Audit context – audit obligations / regulations
k. 5 Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

- Trends, exceptions, and detail regulatory compliance, for example FICA compliance

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- Both

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

Mitigation technics for expected controls to certain risks. Thus, instead of contextualising risks, ALICE should contextualise the controls for risks. Are these controls appropriate to address these risks within the context of this business?
How could ALICE consider cyber and security known vulnerabilities and apply them to the context she knows of the business?

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

The context or use of ALICE should determine the outcome or context of the report. The extent of the specific information and the extent to which certain information you would need detail, would determine descriptive, metric or visual reports.

APPENDIX E8: INTERVIEW ANSWERS OF PARTICIPANT 8

IT STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

The context of this national business that sells and rents photocopying equipment and document management software, content management with 20 local branches and 1 international branch.
External audit is an understanding of what we as a business do, how we do it and what processes we run as a business. As for Internal Audit, it is as if the context of explanations and discussion is clearly understood. Normally this is the case when auditors have practical business application experience historically or currently.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

It is an understanding of the control practically within the business and the application of controls within the way in which the entity conducts its business.
Typically, auditing clerks and junior auditing professionals lack experience in IT and applying the technology context to audit controls and the particular business setting. Typically, their background being financial means that when gathering the information, they find technical and technology context understanding difficult. A true shared understanding between the parties can only be achieved if the individuals shared similar business experiences.

IQ3: *How important is an understanding of the business to you?*

Coming from the business it is very important, not only in audit work but in every aspect of every day. We entrench and encourage business processes discussions into all levels of IT and IT staff. IT is always involved and cannot be divorced from any business process.

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

Communication and the way we structure the "Business Steering Committee", not an IT Steering Committee. Business process owners and subject matter experts form part of the total forum to have constructive, collective, and transparent technology discussions on the advantages, disadvantages, and impacts. The organisation has a transparent and open innovative culture that welcomes ideas from anyone inside and outside the organisation. Management should be good listeners.

IQ5: What would you define as IT-Business alignment and why would you think it is important?

CIO of this business sits on board level. This creates alignment between IT and the business as CEO and CFOs recognise the role and contribution of IT to the business. Business sees IT as a mutual beneficial strategic asset for the future of the business. If the CIO serves on the Board, the alignment within IT and Business comes naturally. The focus then shifts from being operational and "fighting fires" to optimising business processes and adding business value to the business through technology.
Business-IT alignment also refers to the budget and the percentage discussions IT has with the business on current and future business integrating technologies.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

Negative elements within Business, IT, and Audit; the outlook of personalities not to find faults, but to always look positively at any ideas. Customer centric focus and perspective is very important, with multiple options to create a shared context understanding.

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

Seeing things differently, to always have alternatives and options available for business collective decision making.

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes, the auditing mandate and personalities determine differences in the perceptions.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

- Same as above

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

IT is only given a set of questions and queries as part of the financial audit. Access to systems, security questions, and segregation of duties. These then get answered by IT and provided to the auditors. No or limited business involvement. More or less the same questions each and every year. Noted that full access is provided to the auditors (internal and external) with a particular role in the systems, including the ERP system fit for their purpose. Before audit, the auditors disclose exactly which transactions they require, which IT than allocate roles in order to conduct and specific to audit.
One can immediately pickup if an audit did not avail him or herself with the previous year's audit in order to establish continuity, this happens. When it does, it is frustrating.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

Role assignment and opening from business. All forms of audit should be looking at IT and Business in terms of risks to the business continuity. This adds value in that the holistic detail business continuity (not just IT disaster recovery) is assessed considered. Business context and requirements, and business process assessment.

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

- See IQ8

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

External Audit thinks we have things under control but not a lot of effort is spent to understand the business processes, risks, and recovery requirements.

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

Business does not understand all the details. Business should understand the IT exceptions and the norms with the language they understand.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

Knowing the business and knowing the business process in detail is very important not only for IT, but also to shape any perception and obtain shared understanding.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

Business Continuity and Risk Management Matrix showing the context of the business on a page, the business tolerance of the overall picture for creating context. By being on a journey with business to understand their business process requirements, their minimum continuity and recovery requirements, the business gets involved and starts to understand IT in their terms.

Contextualising the business management risk in which IT forms part, for example keeping track of maintenance and licence costs.

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

The future of ALICE is the consolidation of different exiting information, into a management and risk understandable format to manage the business, improve processes, and build trust.

The benefits would be creating a unified business goal understanding, trust, efficiencies, elimination of time to take the audit, and cyber security benefits.

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

Risk Rated Matrix for IT to obtain alignment, credibility and trust together with Business. Insights into the business continuity requirements and mitigation controls and presenting these insights into a format that creates business, IT and Audit trust.

Cyber security and information security vulnerability assessments would be great insights. The risks associated this and a single system like ALICE, understanding the information security context of the business could replace multiple many other systems, thereby saving costs.

The following insights additionally could be beneficial:

- Business and Management insights
- Compliance insights
- Customer business intelligence
- Financial Insights
- Benchmarking, exceptions and executive reporting requirements

IQ19: *In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. Corporate identity and context
c. 2 Organisation and IT strategy alignment
d. 3 Financial context and understanding
e. Time and historical context
f. Corporate Governance of IT context
g. 1 Information / cyber security context
h. Risk context and appetite
i. 4 Technology context, trends and analysis
j. Audit context – audit obligations / regulations
k. Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

- Audit reports aimed at understanding business continuity risks

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

Both, pushing or publishing information and insights to Management, whether it is used daily. In every business there are very few buyers of information; nobody would like more information. It is about providing or pushing the correct personal valuable insights to invoke correct decision making.

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

Business Continuity and Risk Management Matrix showing the context of the business on a page, the business tolerance of the overall picture for creating context. This builds trust and creditability as team together with business.

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

- Both
- Comparison information overplayed on information improves content to show where you are getting value on the money you spend

APPENDIX E9: INTERVIEW ANSWERS OF PARTICIPANT 9

IT STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

My context is the IT manager for four corporate companies sitting on a group level of the Group or Head Office. CIO level work managing complex information technology support for the Group. Taking the IT management and operational responsibility away from Executive IT and Audit.
As IT Manager the context is managing more vendors and suppliers than managing users; selecting many vendors that excel at core information and communication capability and managing them.
Context understanding is IT and Audit grasping where the business is, and how it is conducting its business, how it functions with its sub-businesses, entities, or departments. It comes down to an understanding of systems, people, and procedures. Systems being the technology and technology controls, people include the human resources, personalities, skills, and structures in place to manage and procedures would be the policies and guides in order to conduct business.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

It means the same understanding and seeing the people, systems, and procedures. The real value lies in the benefits it provides in that it would mitigate me to warrant each and every time why I need something and why we need to implement this. A true shared context understanding answers the why questions before they
are asked, and could save massive time, efforts and money. Time saved would be and is the best benefit gained.

IQ3: *How important is an understanding of the business to you?*

Very, it could save lots of time. It is critical; it will take you about a year to gain a more complete understanding. A lot more could have been done if I had a better context understanding earlier. Understanding context of a business is understanding how to approach different individuals and personalities.
Systems and a collection of systems creates different exposure to risks for the business, context understanding about the business and these systems is important and thus that's why a single uniform approach would not work and would not add value.

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

Tools or a system like ALICE to provide visibility to all the procedures, people and systems. Visibility is the most common factor. Visibility to see financial controls, technology and system controls and risk mitigations actions and tracking on one single pane of glass.

IQ5: What would you define as IT-Business alignment and why would you think it is important?

Risk vs. cost, a trade-off always on how costly risk mitigation strategies and action plans are. Driving information, communications, network, and technology towards where business wants to see themselves in the near future, that same future as them. As IT, we align with this making a roadmap in order to get to that future.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

- Lack of information, not having visibility and the lack of the tools to share

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

- Through a tool; software and visibility of tools can save time

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes, business views IT and Audit totally different. They would differ because of their background. IT and Audit is aligned (same vision and personality) but business is removed from that perception.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

- Positions, personalities, and the perception of the different stakeholders looking and perceiving risks

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

External Audit will be in contact and send the previous year's report with management comments. Followed by a new year report requirement where I provide updates and new management comments. This is then forwarded to Senior or Executive Management for comments and inputs.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

With External Audit, more alignment with the vision and why certain control checks are needed. If it is a new auditor, one would have to explain the background, the business the context, and changes all over again. Improvement would be for anyone to seamlessly take over from where the previous audit or work left and for anyone to gain instant context about all the situation of all stakeholders. Interactions can be improved if a tool is provided to the auditors directly for them to obtain reports, they want without asking people for screenshots etc. this could also again save time.

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

- See IQ8

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

Especially External Audit, little to none pre-work and pre-audit preparation work or context creation is done. It feels like the same questions are asked year after year. External Audit misses the mark in understanding the business exposure to certain risks, if they do not comprehend the business situation and the IT supporting situation. There seems to be a lack of planning on their side, using the same template each year.

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

Business only sees a final financial report. Business is not involved.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

Identifying the risks and giving IT a hard time (External Audit). Audit should streamline IT processes and procedures.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

The tools she uses, for example application interfaces and connections. Being the single screen, plugging into other tools and information sources to provide management insights and visibility. It is about what she can present to me.

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

Complete visibility for all stakeholders, if the same information is transparent and visibility for different applications of the information, everyone would share the same understanding of the business.
Hierarchy of the information tailored at different level of ALICE user is important to provide the right amount of details and the correct applicable reports.

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

Cyber security and cloud storage visibility and reports, social media and safe assumptions based on trends from systems, connected devices forming a business systems picture.
It is powerful for ALICE in the future to have a self-healing capability or fixing findings, authorised by the users or auditee. This technology exists.

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

a. 1 Perspective and situational context
b. 2 Corporate identity and context
c. Organisation and IT strategy alignment
d. Financial context and understanding
e. Time and historical context

f. Corporate Governance of IT context
g. 3 Information / cyber security context
h. Risk context and appetite
i. Technology context, trends and analysis
j. Audit context – audit obligations / regulations
k. Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

Provide context of the business in advance to all stakeholders, especially External Audit.
By making safe assumptions about known contexts, obtain user inputs and feedback from stakeholders and creating continuity strings to save time for future audits.
Benchmarking information and comparison information to be able to measure myself. The more she has to offer from tools and connections the more business decision making insights you are going to get.

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- Both
- In order to do comparison in order to trust

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

- Financial data, tax and regulatory compliance data and acquisitions since we do acquisition and tax for all businesses in the Group

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

- Both
- For comparative reasons and you would want to see why you are seeing it, how you are getting it

APPENDIX E10: INTERVIEW ANSWERS OF PARTICIPANT 10

IT STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

Understanding what the business does and how it does it. The context of this business is travel management for the Group, including the total management of corporate travel for entire corporates. A specific sector within the broad travel industry. Travel management for corporates. The business is managing cost and value for money travel, applying travel policies and then travel management insights.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

The willingness to understand the business is not the same for all stakeholders.

IQ3: *How important is an understanding of the business to you?*

Very important, if Audit truly understood the business, the whole audit will be shaped and scope much more positively and effectively. The consequences of audit being slightly negative and wrongly perceived.

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

The following factors:

- The negative perception about the audit. It is a two-way street. The only ways in which the business perception is going to change if they as auditors are going to change their approach
- Communication and context creation
- A tool helps to constantly checking compliance and providing proactive reports, ensuring that I as the CIO is not dependent on a person anymore providing me [with] alerts and flags

IQ5: What would you define as IT-Business alignment and why would you think it is important?

CIO has involved board representation and reports to the CEO. The CEO views the entity as a technology business, as it relies massively on technology for the business. IT-Business alignment is critical. How do you make your business and CEO see the long run sustainable benefits of technology and look past the short-term investment?

It is about education, the ability to talk business, not tech language. Understanding business and how it feels, being able to explain to other people how business wants technology to help them but not understanding technology itself.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

If we see External Audit as we see Internal Audit in terms of adding value, it would be more engaging. External Audit must have a changing in outlook and be willing to add value.

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

Why do we as Business and IT have that perception? It is because they seem to understand our situation better and they seem willing to add value.

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes, our (Business and IT) perception of External Audit is that it does not seem they have a perception about the business, they are only here to tick a box. Not emotionally involved in the business, just the answers to the questions I have and be gone. This lays the foundation for the rest of the audit and engagement.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

No response was given by participant.

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

Business instructs that External Audit has requirements, the request is received, and we send data and information back to them. Report is seen before hand and the report can be influenced before the report is sent to Management.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

Mentality shift from external auditors will set the scene in order for Business, Management, and IT to be more open and will contribute.

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

Mentality of all parties.

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

External Audit and sometimes Audit only takes an accounting approach to IT audits and it is not that simple. Seen as approaching audits with no value driven add and only deriving findings.

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

Trusting in IT and audit handling.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

If we see External Audit as we see Internal Audit in terms of adding value, it would be more engaging. Why do we as Business and IT have that perception, It is because they seem to understand our situation better and they seem willing to add value.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

What I found is what I know, but I want Audit, or a system like to ALICE to come in and tell me what I don't know. ALICE and an integrated context awareness audit tool would be seen as a threat by auditors that know if they do not add value.

It could improve audit since the mundane audit checks can be done by the systems and auditors could focus on how to improve business processes through audit.

The learning capability of ALICE to gather information and based [on what] it sees, knows through other connections and the learning capability make decisions and report and alert. This is exactly the drawback with the current External Audit Model. In order for manual human External Audit to reach the same results, a lot of time needs to be spent within the environment and business.

A system with machine learning capability can translate, process, and transform vast amounts of data much faster and humans.

IQ 17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

- Insights for improved decision making
- The management capability component, unemotional, unbiased, fact driven information to drive business insights

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

- Cyber and information security insights and proactive norms and exceptions
- Privacy and private regulation compliance
- Data leakage insights from within in order to do predictions
- Benchmarking insights version other companies, industries etc.
- Software versioning insights would also be great in order measure and manage software maintenance. Proactive software management

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. Corporate identity and context
c. 1 Organisation and IT strategy alignment
d. Financial context and understanding
e. Time and historical context
f. Corporate Governance of IT context
g. 2 Information / cyber security context
h. Risk context and appetite
i. 3 Technology context, trends and analysis
j. Audit context – audit obligations / regulations
k. 4 Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

Management insights – see above.

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- Both

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

- Combination of industry specific data as well as business continuity data

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

- Both

APPENDIX E11: INTERVIEW ANSWERS OF PARTICIPANT 11

IT STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQI: *How would you describe the term 'context' within your business environment?*

This business context of this business as part of the Group is within the hygiene sector, renting or selling hygiene assets and products, hygiene services, and pest control assets and services. Essentially, it is a supply chain and logistics business with a nation-wide footprint. Context can be described as the situation where the business finds itself, what drives its profits, and how it achieves its strategic objectives.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

Having the similar identical understanding between Business Management, Audit Management, and IT when audits are conducted. Having the same goals. Normally it feels like External Audit has forgotten about IT Audit; is done by the way in the end with [a] few quick checks same as previous years.

IQ3: *How important is an understanding of the business to you?*

- Exceptionally important

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

Further to sharing the goals, understanding and living the business processes in detail contributes to this context understanding. All parties in Audit and Business must understand the business processes in detail, the sequence, timing, people, and how technology enable or can enable each process.

IQ5: What would you define as IT-Business alignment and why would you think it is important?

IT-Business alignment is only achievable if it is truly driven from the top, i.e. CEO, CFO. and or/or Chairperson of the Board. Top-level change thinking does not create alignment, it creates IT integration. True IT integration means improving the sustainability of the business. IT forms part of new product development and in ask to lead technology-enabled business projects.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

- No or limited communication and feedback from audit; zero value add finding

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

Value add from any audit is to add business value, not to catch me out. Suggestion to cover for findings only but to improve business processes, procedures, and/or people. Findings and recommendations to do things smarter and effectively.

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes, audit mentality and the outlook of auditors applying a blanket approach to unique business risks.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

- Different goals of the stakeholders

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

Audit happens as per instruction from CFO and the standard general controls and risks for IT are checked but do not add value to the context of the business or to the latest best practices and technology. After the previous year's external audit, no report was discussed with IT Management and no feedback was given on the report.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

- A positive, open discussion with Audit in order to apply unique sand specific business risk controls to unique business risks. Suggestions are then made from an audit and risk perspective followed by follow-ups in the following year
- Experience and business experience auditors, and not just first year clerks, who also understand IT in the business sense of the company they audit
- Another way in which interactions can be improved is through regular communication

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

- See IQ8

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

Doing the same check box approach audit each and every year and conducting audits in the same way for different types and different business each and every year.

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

Business thinks IT has it sorted and we as IT does not think so. How much is enough, how much money to spend on different businesses information security and on what? The audit community does not apply realistic context specific controls to businesses and IT departments. Applying business specific risks mitigation to business specific and business budget acceptable levels.
Internal Audit within the Group supported by business is value add and constructive.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

The perception of IT about audit is that it should not be a tick box approach.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

To enable IT and not just the CIO to manage by exception. Business continuity and security.
Other ways in which ALICE could understand context better:

- Automation and analyse of reporting and emails
- Connections to related businesses and industries
- Building an audit continuity
- From Financial data produce context for verification
- Automated change management

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

Making sure human resources, skills, and management are not doing mundane tasks, he is growing in his role. An automated system that does the mundane and business context tasks – automate these and provide insights for management analysis and further investigations.

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

Management information inciting business value decision making. Not only managing IT from a dashboard, but also managing the business from [a] dashboard. In short, exception management.
Some other useful insights:

- Advance and predictive / proactive support and assistance
- Financial and risk insights
- VAT and TAX regulations training and education
- Predictive analysis – for example predict impact of changes before the change is approved

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. Corporate identity and context
c. 1 Organisation and IT strategy alignment
d. Financial context and understanding
e. Time and historical context
f. 3 Corporate Governance of IT context
g. 2 Information / cyber security context
h. Risk context and appetite
i. 4 Technology context, trends and analysis
j. Audit context – audit obligations / regulations
k. Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

- Connectors for all systems and services for the business

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- Not both but automatic

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

Automatic reporting in order for me to include reports into Board reports and without intervention provide to business. Succession planning and skills context data in order to manage this risk.

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

Metric preferred, but it will depend on then data. Benchmark information. Description and benchmarked metrics to create comparison context.

APPENDIX E12: INTERVIEW ANSWERS OF PARTICIPANT 12

IT STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

The bank of the Group, there are 22 strategic initiatives for the bank. IT is also responsible for programme management in the Bank. The Bank's context is divided into Fleet financing, traditional or corporate/commercial banking, and then retail banking businesses.
The context of IT within the Bank is made up of nine (9) IT Managers, including managers heading up the three (3) lines of the Bank.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

As an auditor it is important to understand and translate what in IT is needed in the audit. The ability and skills of all stakeholders around the implementation to grasp and understand in terms of IT, what is needed.
In order to have this shared context a more Middle to Senior Management experience and skills is needed to engage at the right level and recognise the context of the business, the audit, and in some cases the IT forming part of the audit.

IQ3: *How important is an understanding of the business to you?*

Very important, External Audit knowing the business, the less they know the better.

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

- Communication, willingness, and teamwork

IQ5: What would you define as IT-Business alignment and why would you think it is important?

IT should be driving business projects, as an example, IT was defining business requirements and processes best for business. An aligned IT brings "shadow-IT" pockets of excellence into one IT organisation aligned and integrated into business. IT is seen as supportive and business understands that IT does not have the capacity to deliver on everything; business wants to be agile enough in this delivery. The importance of IT and technology implications is clearly understood by business.
The IT strategy until now has been "dove-tailing" business. A new strategy for the new year is to pursue bringing in technology to showcase capabilities to business rather than banking products and asking how technology will fit in.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

- Expectation management

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

- Consolidation and focus

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*
- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes, lack of understanding the why.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

Even if external audit objectives have not changed, resources and skills have not changed. There still exists a debate each year regarding how much reliance will be placed on internal audit work. Experience of individuals plays a huge role in the different perceptions.

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

External Audit will meet with Internal Bank Audit first. This will be followed by a planning meeting with External and Internal Audit, IT, and IT line management. The audit is conducted in tandem with Bank Internal Audit and [a] draft report is provided before it is given to Senior Management.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

Understand why from an IT perspective, and translating the why into the context of IT in the business.

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

Understanding required for:
- IT Audit – the examination and evaluation of the business's IT infrastructure policies and operation and management controls
- IT Governance: A critical component of Corporate Governance, the process that ensures the effective and efficient use of IT in enabling the Bank / organisation to achieve its goals

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

Internal Audit has a positive perception of IT and is of the opinion that IT manages their risk controls well. Communication, alignment, and making them part of a team contribute to positive collective relationship.
External Audit – based on their low findings, their perception is that we have risks under control.

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

All audit engagements (external and internal) as well as all risks are well managed, reported on, and communicated.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

Internal Audit team is skilled, helpful, and prepared to assist. They are coming from the stance to remediate audit findings rather than just reporting on them. Personality and mentality play a pivotal role.
External Audit works well because of the level of engagement with Internal Audit. Any audit should have the right approach; what is the ultimate outcome going to be of the audit? Are they there so that they can purposely find findings so that you can be punished, vs. assisting with the identification and remediation of findings? This is key.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

ALICE is not in use yet but will be in the near future.

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

Dependent on the information provided to her. By making dependable assumptions about the situation and context of the Business and IT, she suggests regulations, trends, and evaluations to report on the shortcomings or gaps. Applying the information she gathers from other businesses, internal or external to the Group, to the bank.
If ALICE understands the context of the Group, and the decentralised manner in which the Group is managed, they could be identified technology or process changes that would benefit the Group as a whole.

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

- An automatic quick risk dashboard with exception management and tracking high, medium, and low risks
- Risk mitigations and controls all at CIO Executive level reporting
- Role management insights
- Insights in order to monitor without needing a person
- Trends across the Group from different businesses but creating a way in which businesses can work together and leverage of each other
- The monitoring of changes to production environments
- Validation against standards and good practices
- Mapping users and identity / role management

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. 5 Corporate identity and context
c. Organisation and IT strategy alignment
d. Financial context and understanding
e. Time and historical context
f. 4 Corporate Governance of IT context

g. Information / cyber security context
h. 1 Risk context and appetite
i. Technology context, trends and analysis
j. 3 Audit context – audit obligations / regulations
k. **2 Information / insight requirements context**

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

- Artificial Intelligence and Machine Learning techniques

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

Both, unless she works according to a standard, which will then mean she needs to gather in order to validate.

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

When taking this into account:

- Regulatory perspective and environment
- Size of the bank
- Complexity of systems
- Trained staff on processes
- Policies, standards in place
- Strategy
- Business objectives

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

- Both

APPENDIX E13: INTERVIEW ANSWERS OF PARTICIPANT 13

AUDIT AND RISK STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

Establishing the context from an IT Risk perspective defines the scope for the relevant risk management process and sets the criteria against which the risk will assessed.
The scope should be determined within the context of the Bank's organisational objectives.
The selection of key objectives within the Bank should be driven by an evaluation of the external and internal factors that may currently impact the Bank.
A review of both the external and internal context at the commencement of a risk assessment planning will assist in identifying the process, which may be subject to increased risk and as such, would derive the greatest value from risk assessment.
Context:

- Fully understood/set the "scene"
- 22 defined strategic initiatives
- Make money revenue

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

Shared context: a general understanding of what needs to be done by all parties: Audit, Risk, and the Business. All the different lines of defence.
When teams have a shared context, their individual work has meaning and each individual/team member can thrive and add value towards what needs to be delivered. Grasps and understands what is needed within IT.

IQ3: *How important is an understanding of the business to you?*

To be on a level to understand the business took about a year, but this business like any other bank is complex and ever changing. If External Audit would know the business-like Internal Audit, responses to information requests would not be withheld or limited.
Understanding the Bank is very important, understanding the Business and how leaders in the Bank / organisation think creates and enables people to honour the values we seek to work by.
The more connected and integral you and your team members feel to the business, the less likely you are to subscribe to the "us vs. them" factor and the more teams will work together in a way that they deliver excellence and add value.
OUR Values:

- Quality
- Honesty
- Listen
- Energy
- Respect
- Innovate

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

- An understanding and respect for the roles and responsibilities of the different lines of defence within the Bank
- Communication (open and honest)
- Teamwork – we cannot work in isolation – that in itself is a risk (play your part in the best interest of the Bank)
- You cannot be in a management / leadership role and need to be convinced of the value, you have to understand it and play your part in the best interest of the Bank

IQ5: What would you define as IT-Business alignment and why would you think it is important?

- A dynamic state in which the Business is able to work together and/or use IT to achieve the Bank's objectives; typically to demonstrate a positive relationship between IT and the Business
- IT has an aligned, fully integrated IT Risk Framework and IT Risk policy

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

- React instead of responding
- Only see negative intentions and not the positive intentions or the benefits
- Assumptions break down a shared understanding
- Not establishing the context upfront
- Shift from expectations (which are actually assumptions about the future) to a shared understanding of the facts

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

- Trust others
- Ask rather than assume
- Put yourself in the other person's shoes
- Stay focused on the shared facts
- Minimise criticism
- Ask questions
- Respond, do not react
- Empower and equip everyone
- Consolidate and focus (Business)

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes

- Lack of understanding (the "why")
- Fear – 1st line of defence will often "get out of audit findings" not to disappoint the CIO
- Example misunderstanding of IT Governance

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

- Relates to IQ 8
- Often providing info that is not really relevant, wasting time, energy and productivity
- The experience of individuals plays a huge role in the different perceptions

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

IT Risk Coverage Plan:

- External audit planning within the Bank - on-going process
- Monthly / quarterly committees: where we are all interact

IT, Audit, and Business include:

- Project Steering committee
- Operational Risk committee
- IT Risk and Cyber Security committee
- Testing Governance committee

Note: IT Risk is involved and integrated into the Bank's internal audit planning and execution.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

- Ensure participation
- Provide regular feedback (informed)
- Understanding the "why"

How:

- Communicate the strategy within a long-term vision
- To be/have RACIS – Responsible, Accountable, Consulted, Informed and Supported matrixes for all work and engagements
- Use smart goals in the communication strategy, which are specific, measurable, achievable, results orientated, and timely
- Manage communication with stakeholders with clear objectives, resources, budget and transparency (show people the benefits)

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

Understanding required for:

- IT Audit – the examination and evaluation of the business's IT infrastructure policies and operation and management controls
- IT Governance – a critical component of Corporate Governance, the process that ensures the effective and efficient use of IT in enabling the Bank / organisation to achieve its goals

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

- (13, 14, 15 – All related; "Car wash Scenario")

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

- (13, 14, 15 – All related; "Car wash Scenario")

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

Example on how to shape this perception – the following three (3) must / should have a strategy:

- General user awareness, information security awareness
- Communicate your strategy
- Road shows etc.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

- Artificial Intelligence
- Data Analysis: Machine Learning – the study of algorithms and mathematical models that computer systems use to progressively improve their performance of the task
- Deep Learning based om learning data representations as opposed to task specific algorithms
- Learning can be supervised, semi-supervised or unsupervised
- Deep Learning: Also known as deep structured learning is part of a broader family of ML methods. Her context, understanding will be based on the data we provide her with

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

- Dependent on the information we provide her with
- Risk associated: context to the data, evaluate regulatory frameworks
- Benefits: audit, risk assessment, trend analysis
- Management insights and benchmark information

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

- An automatic quick risk dashboard with exception management and tracking high, medium, and low risks. Risk mitigations and controls all at CIO Executive level reporting
- When you receive a report, what insights would be relevant / beneficial?
- Benchmarking between different Banks in terms of size / industry
- Community (SABRIC)
- Change monitoring and management, including change auditing
- Agile connectors enabling information on demand

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

- All-important / she will just give general findings
- When a risk is contextualising

a. Perspective and situational context
b. Corporate identity and context
c. 1 Organisation and IT strategy alignment

d. Financial context and understanding
e. Time and historical context
f. 3 Corporate Governance of IT context
g. 2 Information / cyber security context
h. Risk context and appetite
i. Technology context, trends and analysis
j. Audit context – audit obligations / regulations
k. Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

Both Techniques: Machine Learning and Artificial intelligence as well as human data input to do situational training.

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- Both
- Standard by herself

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

When taking this into account:
- Regulatory perspective and environment
- Size of the Bank
- Complexity of systems
- Trained staff on processes
- Policies, standards in place
- Strategy
- Business objectives

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

- Both

APPENDIX E14: INTERVIEW ANSWERS OF PARTICIPANT 14

IT STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

Overview of what we do – bulk liquid and gas handling and storage company. Fuels and LPG gases handling; this includes tanks, storage, warehouses, and mostly at the ports. Simple but highly regulated and safety business. Complex in the sense of vat, duties, custom, and excise.
Making sure that we satisfy our customer requirements with regard to their stock. Almost like a bank keeping, your money in a certain contracted way. Rental or rather fees charging and/or full payment for the services.
Background in IT Governance with various other businesses in the Group. IT to provide the right and most appropriate technology and systems aligned to the business strategy.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

- Did not answer

IQ3: *How important is an understanding of the business to you?*

- Did not answer

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

Experience in auditing, and experience in auditing our very niche unique business.

IQ5: What would you define as IT-Business alignment and why would you think it is important?

The technology and information strategy of the business is aligned and in unison with the business strategy. Aligned and enable the business to grow. This entails providing the right IT systems and the correct infrastructure to enable that business strategy.
There is a movement towards incorporating OT or operational technology into IT. It is the vision of the business for IT to be world class. IT with business embarked a while ago on a roadmap towards this world class, to consolidate systems and to ensure whatever we do to aligned to the 10 business objectives. We as an IT enabler are always at the forefront of technology thinking and planning but not on the proven technologies rather than the bleeding edge. It is important that technology is appropriate for the business.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

- A vast array of complex legal and regulatory environments and always changing [the] compliance universe

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

Because of the nature of the business, we need the right people, qualified and experienced skills.

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes, the three different stakeholders will have different perceptions because Audit has a different goal than IT and Business.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

- Inexperience

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

IT forms part of the financial audit. IT controls formed part of the audit, but [an] additional ERP systems basis audit was needed to be checked; that was by the way. They were disorganised. The IT audit is never as organised as the financial control checks. IT audit is always left for last and always on the back foot.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

A tool in order to instantly lift the experience of a clerk by quickly understanding the business context and experience.

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

- Experience and skills of the different auditors

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

No or very limited communication from their side took place. The IT audit was done last minute and so by the way.
The internal audit function provided by Group Advisory Services Audit adds value to IT because there are skills and experience, and an IT understanding.

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

Business perceives IT as in control but “under killed”.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

- An IT audit was done lastly and haphazardly by External Audit, and with the new year one would hope that they add more value

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

Full factual record and not relying on someone's memory or interpretation. By being there throughout the year constantly picking up trends makes her constantly updating context and building context to continuously, all the time audit.
We could load certain assumptions and provide her context, for example the business risk matrix, link to compliance, and provide alerts.

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

A system that can audit factually with the total understanding and experience of IT to understand IT and the way in which it enables the business. Inferences and assumptions are automatically made.

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

- Cyber Security Insights, vulnerability, exception and alert management
- I would not want ALICE to predict the future, there are ERP systems and tools on the market that can predict the future of the business and trend-out scenarios
- The key lies in the cyber security and vulnerabilities management

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. Corporate identity and context
c. 1 Organisation and IT strategy alignment
d. 2 Financial context and understanding
e. Time and historical context
f. 3 Corporate Governance of IT context
g. Information / cyber security context
h. Risk context and appetite
i. Technology context, trends and analysis
j. Audit context – audit obligations / regulations
k. 4 Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

Benchmark information, It is important to understand what will be useful to benchmark.

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- Both, as it evolves it should definitely do both

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

- Compliance risk
- Regulation
- Transactional data
- Cyber security risk data

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

- Metric only – as a manager it rolls up and must be drillable

APPENDIX E15: INTERVIEW ANSWERS OF PARTICIPANT 15

MANAGEMENT AND FINANCE STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

In short, we are a bulk liquid and gas handling and storage company – fuels and LPG gasses. This includes tanks, storage, warehouses and mostly at the ports; simple but highly regulated and safety business; complex in the sense of VAT, duties, custom, and excise.
A service orientated service provider handling bulk customer products, assets, and equipment intensive, in specific geographic locations.
Finance Director (FD) with the Finance department, Procurement, and IT departments reporting into the FD.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

Being on the same page as the auditors to some extent is difficult, senior audit partners tend to stay the same but lower level clerks tend to change all the time. This make shared context understanding difficult and repetitive annually. Senior auditors tend to understand the business better than junior clerks and auditors.
Total business understanding is important since it clarifies how management comes to certain conclusions. My concern is that the firm has decided to implement mandatory firm rotation, having a negative impact of the institutional knowledge of the business clients is lost.
Context of business transactions is complex and intense, understanding the risks takes years and definitely not grasped in one audit. With a large group and a Head Office, auditors need to intercommunicate in order to understand what and how things hang together; this can only be clearly understood over a lengthy period of time and done effectively.

IQ3: *How important is an understanding of the business to you?*

Important, it explains everything, and it is how we come to conclusions.

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

- Experience and having been through the process
- Specific and unique auditing experience

IQ5: What would you define as IT-Business alignment and why would you think it is important?

Technology is important for the business in different levels of the business. It must be appropriate for business. Operational technology adoption is dependent on South Africa's legislation being updated.

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

A vast array of complex changing legal and regulatory complex compliance universe. The challenges that break down shared understanding include an understanding of what part of the business the National Energy Regulator (NERSA) has on the business.
Also, the business is regulated by the port, road, and railway safety regulations, and operationally, what you have to do to work within that regulations. Lease and rental agreements with Transnet. Lastly, there is a lot of legal and environmental compliance.
Within the complexity of handling product, auditors need to understand what and how the business's liability works.

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

- Skills, know-how, and experience to understand

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*
- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

- Yes, assumptions

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

- Inexperience

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

Annually the interaction with External Audit starts with an audit-planning meeting. Short execution. Organised in Financial Audit but not organised in IT for IT audits. As Financial Director, I was unaware of what IT part of the audit they were doing.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

- No response from participant

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

- Experience and skills of the different auditors

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

No or very limited communication from their side took place. The External auditors have not been close enough to the business to know what has changed significantly.
Internal Audit arm at divisional level to conduct internal audit, risk control checks within

the business of the division. There is some reliance placed on internal audit work from External Audit, mostly excuses not to rely on the work. Internal Audit works within the division needs to be in discussion with Management first. I have a holistic approach, so that the output is a more factual report.
Audits perception of the business taken from the findings is sound and in control.

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

- See IQ13 above

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

- IT sees the IT part of the audit as unprioritised

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

Full factual record and not relying on someone's memory or interpretation. By being there throughout the year, constantly picking up trends makes her constantly updating context and building context to [a] continuous, all the time audit.

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

- A system to be able to audit within human intervention and be able to conduct clerk audit work

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

- Did not comment

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. Corporate identity and context
c. Organisation and IT strategy alignment
d. 3 Financial context and understanding
e. Time and historical context
f. 4 Corporate Governance of IT context
g. 1 Information / cyber security context
h. Risk context and appetite
i. 2 Technology context, trends and analysis
j. Audit context – audit obligations / regulations
k. Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

Benchmark information, It is important to understand and to identify what will be useful to benchmark.

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- Both

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

- Transactional data, for example VAT compliance

IQ23: *Would you prefer ALICE to describe the context, the metric of the context, or both?*

- Metric only – as a manager it rolls up and must be drillable

APPENDIX E16: INTERVIEW ANSWERS OF PARTICIPANT 16

AUDIT AND RISK STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

- The assurance and audit context, macro situation: The profession of assurance is under pressure. Why with all the auditing do we still have governance failures? How important is independence vs. audit fees and scope?
- Personal context, the audit firm, and the Group had the same digital Audit system in vision for years, and the two companies share a similar roadmap. We then decided to work together for mutual benefit, but independence prevented us from that until now. With all firms building tools and software, will the future of audit be bots auditing bots?
- RPA – Robotic Process Automation ensures that audit work that normally would take us 8 to 12 hours now takes minutes. Additionally, we are seeing that the clerks entering audit firms today are much more tech savvy, the historical clear distinction between a financial and an IT auditor is [in the] past. The lines are now blurred, and it is very clear that all auditors need to put on an IT hat when looking at any controls.
- Audit is and becoming a commodity, this means that the competition is intense, and the fees are shrinking.
- In some cases, a lot of work is conducted on IT control checks but ending up that the failing controls have no impact of the bigger audit, i.e. this failed IT control will not have an impact on the financial audit opinion. Why are IT controls audited if the conclusion is no impact? If the context of the controls is not understood within the reporting cycle and business context. It is really about the control, why it is needed and was it the correct control to test? We must start with understanding the business, understanding the processes, and identifying the right controls in the right way.
- The value of IT audit and IT control findings? Why if IT controls that are fundamental to the audit, is it for the CIOs so unimportant that the findings do not feature or receive any attention? Operational level findings are unimportant for the IT strategy. If IT Audit is to drive value for the business and the shareholders, it would have to focus on the tactical and strategic levels of IT and not only the operational level of IT. The reality is that the operational level IT controls takes all the time, one would have to somehow obtain an easier, faster, better way to conduct the mundane, repetitive control checks.
- By looking at the history why audits have failed or what causes it to fail, throughout the world, was not because IT general controls failed, very rarely was it because IT controls failures. Why then is so much time and effort placed into IT control checks? Surely more time must be spent on strategic technology and information risks that could impact the entire business in its context.
- Business is unique; the Group is very unique and diverse within its divisions. Why then is audit nit unique for each organisation?
- After an extensive research using a context understanding tool for audit clients, we came to the conclusion that the good practice tools and methodologies used, does not actually take context of a specific entity into account. Two factors were missing from Technology Value Assurance:
    1. Role of IT – the risks, the importance of IT within the context of the business
    2. Condition of IT or the fitness of IT (fit for purpose and fit for use)

- If these two factors within a business are not understood by all and especially the audit, then the IT risks will not be contextualised.
    1. Pain points (What removes value from the business based on point of view?)
    2. Inward or the outward focus of IT (Service aligned or business objectives aligned?)
- Moving from a service provider through a business partner to a business leader. IT as whole is entrenched within the business objectives. This will then ensure agile governance is achieved through a culture of compliance. Audit thus change, as trust and technology entrenchment will change the way, level and what controls we audit.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

The concept of enabling IT and enabling audit to deliver the value. Taken from Enterprise Architecture, a concept called Context Diagrams. Building views and viewpoints in the views with analysis creating context diagrams.

IQ3: *How important is an understanding of the business to you?*

Absolutely critical for any audit engagements and implementation. Not only the business as such but even more the processes and the context around the processes. How can you audit without truly understanding the entire business strategy? Within audit implementations we drive the mapping of risks, be it financial or IT implicated risks within the documentation of the process flows.

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

From and internal audit point of view, the following factors:

- Understanding the strategy, business objectives and structure
- How to measure these. Measurement drives behaviour, and thus measurement according to strategy. Rewarding measurement, measure to reward, not to reprimand
- See Enterprise Value Maps in order to get to IT Capabilities. (How relevant to the business is an internal audit cyber security assessment?)

From an external audit point:

- Only for an opinion on the financial statements
- Their focus should not be value add, it must be providing an opinion on the statements but in this process, they should still be value, quality and independence
- Internal audit should not be done in order to replace external audit and thus reduce the audit fee
- Context understanding or a lack thereof is not a problem at partner level but on clerk level. This is due to experience and skills, historical background. The understanding why controls are tested is not understood, simply because we were told to or "it is what we have done last year." Again, how can you audit without knowing, and truly knowing the strategy

IQ5: What would you define as IT-Business alignment and why would you think it is important?

It is about moving from service alignment to business objectives alignment. How can you audit without truly understanding the entire business strategy?

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

- Answered in previous questions

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

- Answered in previous questions

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*
- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes, different perceptions about the business because “you live in the world that you are”. In conclusion, the same risks of the business are not perceived and not perceived in the same way. It is that different perceptions of value and this is different from your point of view and priorities.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

- Levels and circle of influence; your goals, objectives, and management level

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

- Example of a retailer was created as an external audit

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

- No response from participant

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

- No response from participant

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

The Audit profession should think about the following:
- The focus is too much to see if the control is working, the focus is not enough to proof that the control is not working. Who can do what to make that this control does not work or is not effective? An ALICE can be beneficial in this data analysis. How can controls be manipulated and how?

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

The sentiment from business is sometimes summarised as if you want to add value, audit, and leave. Leave my people to do their work.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

- No response from participant

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

My vision for ALICE and audit systems is the following:

- On the final day of the financial year, is the audit is effectively complete
- Not after the fact / post-event
- Sample driven assessments and assurances
- The audit is of such a nature that control failure are directly and immediately addressed
- In fact, predicting possible control failures before it happens in order to conduct preventative remediation. All this is based on connections and pattern recognition. Preventative controls are always stronger that post-event remediation controls
- The more automated the future business will become; the more complex and difficult audits is going to be. Systems like ALICE could provide possibly the only bulletproof way to audit, and artificial intelligence could be the only feasible solution to audit

ALICE can only understand context better if the correct models are given to her. Can one use ALICE to understand context better, yes, but it will be difficult for her to do so.

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

- ALICE could potentially draw and represent context understanding through the illustration of context diagrams. It includes views and viewpoints. Define a view and build viewpoints within the view. ALICE could define the view, analyse the data and then plot conclusion or assumptions on it. In this way the output can be standardised and will be beneficial
- Coupled to this ALICE could potentially represent the information and risks in radial maps connected to context maps in order to illustrate risks, in categories, and the shift of risks if context changes. Company risk profiles coupled to context – illustrating where and risk are important in the business context
- Idea: what about Enterprise Audit Value Maps taken from Risks Continuum? It is a way in which to contextualise risks. Starting from general risk and moving to specific risks categorised as the following: (Enterprise Architecture Continuum)
  - Foundational risks
  - Systems risks
  - Industry risks
  - Organisational specific risks
- One of the major benefits of a context aware system is bringing of audit value without keeping you and your people busy.

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

- More 1st line than 3rd line. The value of ALICE insights lies in predictive and proactive analysis. ALICE is digital labour. There is no reason why when cannot apply for a post in either 1st, 2nd or 3rd line. The management authorisation must be kept or logged. Actually, ALICE audits the effectiveness of the control and not the control itself. The value lies in the consequences of the ineffective controls not being remediated. We should do the right thing when it must be done, then an audit or controls will not be needed.

***IQ19**: In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. Corporate identity and context
c. 1 Organisation and IT strategy alignment
d. Financial context and understanding
e. Time and historical context
f. 1 Corporate Governance of IT context
g. Information / cyber security context
h. 2 Risk context and appetite
i. 3 Technology context, trends and analysis
j. 4 Audit context – audit obligations / regulations
k. Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

ALICE could document business processes or diagrams. Transaction flows and process flows with coupled risks with timestamps.

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

Both, it is important that she has the ability to automatically find, because it is not always apparent for a human. Humans have habits and emotions, preconceived notices and biases.

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

- Big data and large volumes of information
- Threat Intel feeds through external data feeds

***IQ 23:** Would you prefer ALICE to describe the context and metric the context or both.*

- Both

APPENDIX E17: INTERVIEW ANSWERS OF PARTICIPANT 17

MANAGEMENT AND FINANCE STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

We have shown a growth from a forex provider to and forex bank to a commercial bank. 2011 purchased a full maintenance leasing company. In the recent past 4 years, we have diversified the bank. At this stage, we [have] other full business banking which includes FML and FX, we also do not do retail banking, but this excludes lending. The complexity and growth of the bank, its systems, processes, and technology have increased exponentially with this diversification. Relating context to "seeing the movie", if you have not seen the movie, i.e. do not have experience in specific certain aspects of banking it will take you longer to understand. The concept that the time context understanding takes is determined by your background, interest and effort spent.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

- Very important, especially on a senior level
- FML and FX understanding is really important

IQ3: *How important is an understanding of the business to you?*

In order to understand banking, one would have to understand a vast array of banking concepts, not necessarily products that make up the income statement and balance sheet but capital, the way in which the bank makes money in various infinite ways. We typically look for senior finance people with not less than 10 years in-depth banking experience.

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

Applicable banking experience and skills at all levels in order to see the largest part of the big banking picture. The concept of auditors experiencing the business before the actual experience, dummy audits? The next and new area of the bank is the furthering of the channel strategy and the digital transformation of products and services.

IQ5: What would you define as IT-Business alignment and why would you think it is important?

- Very important and crucial, IT drives what you can do with the businesses and how you can shape the business. IT has to play a crucial role in shaping the business as well. A lack of IT skills, resources, and capacity will lead to many inefficiencies and ineffectiveness for the business. Business-IT alignment is defined by operating models of the business (bank) and how IT supports the current and future models in order to satisfy all inclusive strategic objectives, it is managing their interdependencies, commonalities, efficiencies and costs
- IT is and should be aligned to running and maintaining the bank, as well as building the bank; IT has Executive Committee sitting on the bank

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

Complexity of the business and thus bank in the way you audit. The complexity of the audit. This includes capital, interest margin, forex, VAT and card interchange. Understanding the complex compliance and statutory universe.

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

- Training

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*
- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

Yes, highly possible between the stakeholders of audit, but also within the business or bank there are some different perceptions.

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

- Background, complexity
- How and when and it will again differ from area to area of the bank

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

Annually and as part of the Audit and Risk committee, an external audit takes place. Internal audit forms part of a continuous control exercise. Planning takes place with Management, External Audit, and Internal Audit. We have extensively spent time with the new incumbent auditors to give them background and context. Questions that were raised included how will the team get up to speed with the bank and the context, as well as get familiar with the information from the previous auditor partner and manager in order to build continuity. External Audit's value lies for us to provide us assurance and comfort on the models that we employ. In a way to keep us safe and guide us not to transgress any compliance and regulations.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

Communication: monthly and regular discussions with audit partner. If there is large project that could have an impact on the statements, they as external auditors are also involved on the Steering committee. Impact assessments are conducted throughout in order to move to continuous audit.

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

- See IQ8

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

From the audit results this was relatively clean with suffice controls. We shared a risk about the shortage of financial skills to address all the functional, as well as the massive regulatory and compliance requirements. Biggest risk currently for the bank remains anti-money laundering AML.

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

- External Audit could potentially reply more on internal audit work if the skills and work done is suffice. This could save the bank cost but more importantly free them up for more value-add work. This could be done by using information technology. For example, auditors requested capex data, large amounts of data in files, which took bank resources many hours to compile.
- It is important that auditors have the necessary banking experience, technical know-how and skills for banking audit. The other value External Audit could and have provided to us throughout is in specialist areas and specialist advice.

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

Some human errors in IT could potentially impact the business but as a whole IT has suffice controls in place. It is perception is one of complex systems.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

Exception reporting and process automation. Balancing and reporting of foreign exchange profit by comparing them to OPEX and the GL. Automatic or robotic process automation to enable exception reporting. It is important for ALICE to constantly learn and adapt in order to always stay abreast of the latest context.

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

- Process automation, cost, and audit efficiencies

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

The following insights and management ability insights:

- Potential root causes analysis and identification
- Problem identification
- Benchmarks and statistics (important that like for like is compared that makes sense)

It is vital that the same information, same data and that the reports be presented is align. This means that the definitions are understood by all in the same way. Essential that between all the stakeholders in audit and IT that we do not duplicate insights.

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

a. Perspective and situational context
b. Corporate identity and context
c. Organisation and IT strategy alignment
d. 2 Financial context and understanding

e. Time and historical context
f. Corporate Governance of IT context
g. Information / cyber security context
h. 1 Risk context and appetite
i. 3 Technology context, trends and analysis
j. Audit context – audit obligations / regulations
k. Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

Exception reporting, having a system understand the standard report and audit requirements, and having it ready for reporting, but additionally having management and financial dashboards available for exception reporting.
Additionally, the following techniques:

- Tendencies and inferences analysis of statistics
- Machine learning and continuity information
- Improvement in operations
- Efficiencies and effectives in the business processes
- Improvement in process timings and turnaround times

Note that is important that systems like ALICE and any system not be built around people but rather build around process, embedded into the process.

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- Both, but very important that the definition is defined

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

The following context data:

- Within the bank Data warehouse financial and non-financial data
- Anti-money laundering information
- Foreign exchange information
- Non-competitor behaviour
- Pricing data
- Product risks
- Access control and information security and cyber risks

IQ 23: *Would you prefer ALICE to describe the context and metric the context or both.*

- Description and metric but defined to be understood by all

APPENDIX E18: INTERVIEW ANSWERS OF PARTICIPANT 18

AUDIT AND RISK STAKEHOLDER

RQ1: What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?

RSQ 1.1: What constitute shared context awareness and IT-Business alignment within IT Audit and Governance?

IQ1: *How would you describe the term 'context' within your business environment?*

- The first responsibility I have in Internal Audit for the Group [is] to de-risk the Group's environment from a business, operational and IT perspective. The aim is to provide digital assurance in order to do more with less. Secondly is the oversight of Head Office IT where we have been on a digital journey from aging infrastructure to relevant cloud based secure environment. Seeing the world as a CIO, vendor engagements, operations, service level management, their concerns and requirements. The last responsibility would be the executive heading up the ALICE team, the how to innovate beyond the textbook building the future with only one shot at it.
- The way in which we operate as a group. Context in the bigger Group is about buying management and trusting management to what they do best. Total autonomous trust with huge responsibility. Decentralised, you run your company autonomously, you determine the way you run, the future, your strategy, its performing or you out. This is true for not only taken over companies but also group advisory services.

IQ2: *What does the term 'shared context understanding' mean to you when conducting IT audits?*

It is invaluable and extremely important. Simply the same appreciation of how the business conducts its operations, audit, systems, processes with people and the same comprehension of its external macro environment. All three stakeholders, Management or Business, Audit and Risk, and finally IT need to understand the same context in the same way, but their output needs to be different. I.e. they often want to see different things, what is important for them individually will differ.

IQ3: *How important is an understanding of the business to you?*

- Context is not only critical but also valuable
- So critical because of the context within the Group is extremely diverse. That [is] why building an audit system within the Group was so fundamentally game changing, we needed a system or a tool that would audit and assess all 203 different contexts, just on company level

IQ4: *What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?*

1. One common version of the truth. Management has a certain view of the business, auditors have a universe of risks, and IT is usually fighting fires. Seeing one common collective risk to the business is the key. One version of the fact in order to apply multiple lenses, but at least the entire business is working off the same facts.
2. Audit normally does not communicate in a language that resonates with management. The presentation of the findings and the way in which findings is presented make a world of a difference. The visualisation of findings to date has been lacking.
   The communication protocol between Audit (internal and external) should be more constant, more real time, looking at the same things but differently.

The key to improving understanding is about uplifting and upskilling the auditors to operate at the same level of management, in order to present findings and information in a way that will achieve the same outcomes and goals of management. By doing this they will become a value-added function that Management can respect and work with.

IQ5: What would you define as IT-Business alignment and why would you think it is important?

Not a lot of CIOs have sitting [on] the Board. The more closely IT is aligned to business, the faster the traction. How does the CIO obtain the following?

1. A seat around the Board or Exco table
2. Involved and trusted to solve business problem, with technology but the problem solver for and in business

RSQ 1.2: What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?

IQ6: *In your opinion, what are the challenges that break down a shared understanding?*

Trust, trusting Management and especially IT and Financial Management not to distort the truth. When the information is not factual, complete or wrong. The default position of Audit should be to trust rather than to distrust. This creates excellence in execution.

IQ7: *In your opinion, how can these challenges be overcome to create a common or shared understanding?*

Building and providing more trust as well and changing the way in which we and Management and IT present info and do enough research.

RSQ 1.3: What are the different perceptions within IT Audit and Governance?

IQ8: *Do you think different perceptions exist within IT Audit and Governance?*

- ***If yes,*** *what perceptions, and why would those perceptions differ?*
- ***If no,*** *why do you think that there would not be a difference in perceptions?*

- Yes, historical background and seeing audit (internal and external) as the enemy, and not to help and seeing the value. Rigidity of mindset about seeing the auditing function as punitive
- The perception of Audit at the Group has changed into a respected function, Management call us not audit them, Internal Audit needs to, and now currently does, operate at the same level as Management. The Internal Audit function of this Group is highly skilled with charted accountant qualifications, we became a function of talent and we had to give that talent the environment to grow and thrive.
- How do you shape perceptions: Injection of skills, leadership (culture mind-shift) change and embracing technology

IQ9: *In your opinion, what creates different perceptions in your company or department when conducting audits?*

- Not seeing the same version of the truth of information

RQ2: How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?

RSQ 2.1: How do stakeholders interact when conducting IT audits and implementing IT Governance?

IQ10: *How and when do the three stakeholders (IT, Audit, Business) interact?*

Internal Audit is currently seen as value add. Internal audit is seen as understanding the businesses, contextualising the risk and controls, and add value to Management. Internal audit transformation model from mistrusted punitive non-partner to a business value partner.

IQ11: *In your opinion, what can be done to improve the interaction between these stakeholders?*

Be present, especially Senior and Management levels, involved and care about the business.

RSQ 2.2: How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?

IQ12: *How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?*

- See IQ8

IQ13: *What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?*

- Audit normally does not communicate in a language that resonates with Management. The presentation of the findings and the way in which findings is presented make a world of a difference. The visualisation of findings to date has been lacking
- External Audit sitting on a wealth of data and information has not necessarily contextualise it, no analysis over that data and no thinking what impact of the business. The whole view of risks, controls, why it is lacking, why it failed, why does it exist, and the potential impacts. Practically applied the finding in the business, it does happen sometimes but sometimes this is not presented to Management in a way that Management accepts a valuable.

IQ14: *What do you think are the perceptions of your Business stakeholder and how do you shape this perception?*

Business stakeholder's audit perception about:

- External Audit: necessary evil in order satisfy only one need
- Internal Audit: now valued, but this has not always been like that. We will always work hard to keep it that way. Where External Audit is seen as a necessary evil, Internal Audit is seen as a necessary blessing. Moving from a cost centre as audit to a value-added cost which is not "accounted" because it is worth something, and important for Management
- Perception of IT: Changing mindset, now seeing IT as a key factor to innovation. Research is now about technology in our leadership development programs. The appetite to learn about, embracing technology for the benefit if the Group is ever increasing
- IT needs to figure out how technology enables the business, and one cannot do this before IT has figured out the business. This is the context understanding

IQ15: *What do you think are the perceptions of your IT stakeholder and how do you shape this perception?*

IT in the Group in general sees itself as isolated and in this bubble. Doing the right things and work, but not presenting it in a way that resonates or is accepted by Management. Getting in with the business, It is not always an IT and technology conversation.

RSQ 2.3: How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?

IQ16: *In what ways can a system such as ALICE understand the context of an entity better?*

- Tell me things I do not know
- Being the trusted source of the truth, being the systems that collect, collate and store the one version of the truth together with the why's and the context analysis applied to the information. Being a system with context understanding information that Management longs for and requests. Technology must be the enabler, the source of truth in order for the auditor to become or stay valuable. To take the audit information, the need for audit information to make the right decision.

IQ17: *What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?*

Same as above but in summary, a context understanding ALICE is a living system that is a trusted source of the truth, being the systems that collects, collates and stores the one version of the truth together with the why's and the context analysis applied to the information. Being a system with context understanding information that Management longs for and requests.

IQ18: *What insights would be beneficial from a 'context understood' ALICE audit report?*

The management tool we should provide to still give insights, but to allow them to interrogate those insights and benchmarking information. This includes norms and exceptions.

IQ19*: In your opinion, what would you rate as the most important context ALICE could have?*

a. **2 Perspective and situational context**
b. Corporate identity and context
c. Organisation and IT strategy alignment
d. **1 Financial context and understanding**
e. Time and historical context
f. Corporate Governance of IT context
g. Information / cyber security context
h. **4 Risk context and appetite**
i. Technology context, trends and analysis
j. **3 Audit context – audit obligations / regulations**
k. Information / insight requirements context

IQ20: In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?

- Risk matrix and machine learning. The system of ALICE should and, must use artificial intelligence for her to make her own correlation in order to be predictive. Building up context from past and present information in order to build and keep continuity through time stamping
- The future model lies in the safe assumption of context, growing context

IQ21: *Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?*

- Both

IQ22: *Are there any specific context data that you would like ALICE to consider when contextualising risk?*

- See above

IQ 23: *Would you prefer ALICE to describe the context and metric the context or both.*

- Both

APPENDIX F: FINDINGS / STANDOUTS AND COMMON RESPONSES (F1-F154)

No.	RSQ/ SRSQ No.	Questions	Relating to No.	Finding No.	Findings / Standout and Common Responses	Linked Participants
1	**RQ1**	**What are the factors affecting a shared context understanding among the stakeholders when conducting IT audits and implementing IT Governance?**				
1.1	**RSQ 1.1**	**What constitute shared context awareness and IT-Business alignment in IT Audit and Governance?**				
1.1.1	IQ1	How would you describe the term *'context'* within your business environment?	1.1.1	F1	Context of the business is about the "what" and the "how" of the business and how everything fits together in order to drive how the business make money. Context can be described as the situation where the business finds itself, what drives its profits and how it achieves its strategic objectives.	P1, P2, P3, P4, P5, P6, P8, P10, P11, P13, P16, P17, P18
			1.1.1	F2	Context within a business, its business units and even within the business between its different departments are unique and thus different.	P4, P5, P9
			1.1.1	F3	Context understanding stems from experience in the business, historically or currently. Your personal background determines your understanding of the business context.	P14, P16, P18
			1.1.1	F4	Context is the breath of the internal and external factors that influence the business situation.	P3, P5, P13, P18
1.1.2	IQ2	What does the term 'shared context understanding' mean to you when conducting IT audits?	1.1.2	F5	Shared context understanding is a true understanding of where the other parties are coming from, and why. A true shared context understanding answers the why questions before they are asked.	P2, P7, P9, P4, P5, P6
			1.1.2	F6	Understanding things, IT, Audit, and specifically the audit application, in a similar way.	P1, P4, P5, P8
			1.1.2	F7	Advance context setting and audit training is needed to address the visa versa understanding that is needed.	P5, P12

			1.1.2	F8	A shared understanding is total comprehension of the situation of the business at audit partner or top level. If this is the case, the direction of an audit will then be steered in the right direction and add business value. Thus, shared context understanding is created at the most senior level.	P6	P15	P17																
			1.1.2	F9	Context understanding is a feeling of similar circumstance or have being in a similar situation than then another stakeholder.	P1	P4	P5	P6	P7	P8	P11													
			1.1.2	F10	It is an understanding of the controls practically within the business and the application of these controls in the way that the entity conducts its business.	P8																			
			1.1.2	F11	A true shared understanding between the parties can only be achieved if the individuals shared similar business experiences.	P6	P8	P12																	
			1.1.2	F12	The ability and skills of all stakeholders around the implementation to grasp and understand in terms of IT, what is needed.	P3	P12																		
			1.1.2	F13	Mandatory firm rotation is having a negative impact on the institutional knowledge created by context awareness over time.	P15																			
			1.1.2	F14	Context understanding takes time and is built-up over a period of time and audits	P9	P15																		
			1.1.2	F15	Shared context is having a different perspective but same understanding. Viewing the same situation from different viewpoints in the same way by different people.	P2	P7	P9	P10	P11	P15	P16	P18												
			1.1.2	F16	All three stakeholders, Management or Business, Audit and Risk, and finally IT need to understand the same context in the same way, but their output needs to be different.	P1	P2	P11	P12	P13	P15	P16	P18												
1.1.3	IQ3	How important is an understanding of the business to you?	1.1.3	F17	Understanding the business is important because it enables a comprehension of the priorities of the business, people, stakeholders, and customers.	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P15	P16	P17	P18		
			1.1.3	F18	Similar understanding of the business is very important, crucial for implementation, and critical for risk management.	P1	P4	P9	P16																

			1.1.3	F19	Business processes discussions with Business must be encouraged on all levels of IT and IT staff.	P7	P8	P16																
			1.1.3	F20	Understanding the business and business processes personally creates value for the business and all stakeholders.	P7	P8	P16																
			1.1.3	F21	Context and business understanding become more important in a growing diverse business environment.	P16	P17	P18																
1.1.4	IQ4	What factors do you think contribute to an improved understanding from both an audit and a business perspective within IT Audit and Governance?	1.1.4	F22	A factor that could contribute to improved understanding is time investment by both Audit and Management (business).	P1	P2	P3	P11	P18														
			1.1.4	F23	Constant and consistent communication and feedback could improve audit implementations, and importantly, communicating in a language that resonates with Management.	P1	P4	P5	P6	P8	P10	P12	P13	P18										
			1.1.4	F24	Further to sharing the goals, understanding and living the business processes in detail contribute to this context understanding – true business process understanding.	P6	P8	P11	P16															
			1.1.4	F25	The lack of experience at lower audit or execution level of the audit contributes to a lack of understanding.	P14	P15	P16	P17	P18														
			1.1.4	F26	Seeing one common collective risk to the business is the key. One version of the fact in order to apply multiple lenses, but at least the entire business is working off the same facts.	P7	P9	P13	P18															
1.1.5	IQ5	What would you define as IT-Business alignment and why would you think it is important?	1.1.5	F27	IT needs to work for the business and not against the business.	P1																		
			1.1.5	F28	Alignment means understanding and implementing the business vision, mission, objectives, and performance measures in every aspect of IT.	P2	P12	P14																
			1.1.5	F29	Business-IT alignment about creating IT objectives and performance contracts from these business objectives.	P2																		
			1.1.5	F30	Business-IT alignment is defined in today's world as Business and Management's digital maturity.	P3																		

			1.1.5	F31	Alignment means understanding the business capability model.	P3																		
			1.1.5	F32	Business-IT alignment is important since many opportunities and risks will be missed if IT and audit does not understand the intricacies of the business.	P4	P13																	
			1.1.5	F33	True value of IT lies in the way in which IT can bridge the gap between information and knowledge and turn this knowledge into action.	P5																		
			1.1.5	F34	Thinking that IT is an enabler and not integrated into the business strategy and as part of the business strategy is archaic.	P6																		
			1.1.5	F35	IT needs to form the business of the future and all strategic business discussions cannot be made without an IT appreciation in some form or another.	P6																		
			1.1.5	F36	Business-IT alignment is important for the future of any business. IT needs to form the business of the future and strategic business discussions cannot be made without an IT appreciation in some form or another.	P7	P8																	
			1.1.5	F37	IT's Key Performance Indicators (KPIs) are set to what the needs of the business are.	P7																		
			1.1.5	F38	Business-IT alignment also refers to the budget and the percentage discussions IT has with the business on current and future business integrating technologies. True IT integration means improving the sustainability of the business.	P10	P11																	
			1.1.5	F39	If the CIO serves on the Board, the alignment within IT and Business comes naturally.	P8																		
			1.1.5	F40	It is about IT moving from service alignment to business objectives alignment.	P16																		
			1.1.5	F41	Very important and crucial, IT drives what you can do with the businesses and how you can shape the business.	P17																		

			1.1.5	F42	The more closely IT is aligned to Business, the faster the traction.	P18																			
1.2	**RSQ 1.2**	**What are the challenges that stakeholders face when conducting IT audits and implementing IT Governance without a shared context understanding?**																							
1.2.1	IQ6	In your opinion, what are the challenges that break down a shared understanding?	1.2.1	F43	Audit is always seen as identifying faults and not helping and assisting. This ends up doing more harm than creating a shared understanding.	P1	P2	P3	P4	P10															
			1.2.1	F44	The lack of communication and Management (stakeholder) involvement breaks down shared context understanding.	P1	P6	P9	P11																
			1.2.1	F45	External Audit is under pressure by time, and cost controls cause a breakdown in understanding.	P1	P7																		
			1.2.1	F46	The default position of Audit should be to trust rather than to distrust. This creates excellence in execution.	P18																			
1.2.2	IQ7	In your opinion, how can these challenges be overcome to create a common or shared understanding?	1.2.2	F47	These challenges might be overcome by having more experience as an auditor, and through allocated time and improved audit planning and support.	P1	P2																		
			1.2.2	F48	An audit and process improvement culture will ensure that the challenges can be overcome.	P2																			
			1.2.2	F49	To create clarity (shared understanding) in all aspects of business including audit, IT needs to be the broker in digital transformation to provide the answers to the questions they have not thought of yet.	P3																			
			1.2.2	F50	A technology-integrated culture is needed. This also means that a huge amount of training is needed within all facets of the business.	P2	P3	P5																	
			1.2.2	F51	Through technology (and specifically the concept of artificial intelligence and the learning aspect), there is no other affordable solution to external audit pressures.	P7																			
			1.2.2	F52	Audit culture and outlook - suggestion to cover for findings only, but to improve business processes, procedures, and/or people.	P11																			

			1.2.2	F53	Building and providing more trust as well and changing the way in which we, Management and IT, present info and do enough research.	P18																		
1.3	**RSQ 1.3**	**What are the different perceptions within IT Audit and Governance?**																						
1.3.1	IQ8	Do you think different perceptions exist within IT Audit and Governance? • If yes, what perceptions, and why would those perceptions differ? • If no, why do you think that there would not be a difference in perceptions?	1.3.1	F54	Yes, Management thinks or has a perception that their processes and controls work; auditors think it does not. The perceptions differ because I think Management is subjective, because they work within the business on daily basis, they think controls are sufficed. But as auditors we are objective, start off with a professional scepticism and will not take something on face value.	P1																		
			1.3.1	F55	Yes, different perceptions are created by all involvers' culture, background, personality, audit objective, and audit mentality.	P2	P3																	
			1.3.1	F56	Yes, it would differ because of a lack of business operational understanding.	P4																		
			1.3.1	F57	Different perceptions exist. In an aligned business, IT-Business and Internal Audit are all working towards the similar goal of improving controls to improve the value of business. External Audit has a different perception because they have a different goal or purpose towards shareholders and not Management.	P5																		
			1.3.1	F58	Yes, audit mentality and the outlook of auditors applying a blanket approach to unique business risks.	P11																		
			1.3.1	F59	Yes, the same risks of the business are not perceived in the same way.	P5	P11	P16																
			1.3.1	F60	Rigidity of mindset about seeing the auditing function as punitive.	P18																		
			1.3.1	F61	All participants agreed that a difference in perception does exist within IT Audit and Governance.	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18		

			1.3.1	F62	How do you shape perceptions? Through Injection of skills, leadership (culture mind-shift) change, and embracing technology.	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18
1.3.2	IQ9	In your opinion, what creates different perceptions in your company or department when conducting audits?	1.3.2	F63	Limited to no historical context creates different perceptions because of what they do, how audit is done, and if audit is done from a zero base.	P1	P2	P3	P4														
			1.3.2	F64	External Audit is concerned with an annual once-off business opinion rather than Management's requirement for continuous business assessment.	P5																	
			1.3.2	F65	The Auditor's mandate creates the different perceptions.	P7																	
			1.3.2	F66	Experience of individuals plays a huge role in the different perceptions.	P12	P13	P14	P15														
			1.3.2	F67	Not seeing the same version of the truth of information.	P18																	
2	**RQ2**	**How can a shared context understanding among stakeholders be achieved when conducting IT audits and implementing IT Governance?**																					
2.1	**RSQ 2.1**	**How do stakeholders interact when conducting IT audits and implementing IT Governance?**																					
2.1.1	IQ10	How and when do the three stakeholders (IT, Audit, Business) interact?	2.1.1	F68	No or limited interaction between the stakeholders. External audit is done via an instruction from Business and Management with no or limited involvement from IT in terms of planning for the audit.	P1	P2	P3															
			2.1.1	F69	External Audit partner is engaged once, only annually.	P4																	
			2.1.1	F70	It is absolutely critical that continuity of the partner and the audit manager remains the same or has some sort of transferal of information.	P7																	
			2.1.1	F71	No or limited business involvement. More or less the same questions each year.	P8																	

			2.1.1	F72	One can immediately pick up if an auditor did not avail him or herself with the previous year's audit in order to establish continuity, this happens. When it does, it is frustrating.	P8																	
			2.1.1	F73	Business instructs that External Audit has requirements, the request is received, and we send data and information back to them.	P10																	
			2.1.1	F74	Audit happens as per instruction from the CFO and the standard general controls and risks for IT are checked but do not add value to the context of the business or to the latest best practices and technology.	P11																	
			2.1.1	F75	Internal audit transformation model from mistrusted punitive non-partner to a business value partner.	P18																	
2.1.2	IQ11	In your opinion, what can be done to improve the interaction between these stakeholders?	2.1.2	F76	Through improved constant, consistent communication, positioning and similar shared objectives to improve business.	P2	P3	P4	P5	P6	P7	P8	P9	P11	P13	P14	P17							
			2.1.2	F77	Audit and especially External Audit's ability to accept management focus areas, concerns, and controls. One of the less acknowledged factors is personality fit of an auditor. The auditing concept is a confrontational relationship with the potential for conflict and abrasiveness. Auditors need to be pragmatic and it is important to be relational throughout the process. Auditors need to be relational.	P4	P5																
			2.1.2	F78	With External Audit, more alignment with the vision and why certain control checks are needed.	P9																	
			2.1.2	F79	Use smart goals in the communication strategy, which are specific, measurable, achievable, results orientated and timely.	P13																	
			2.1.2	F80	A tool to lift the experience of a clerk instantly by understanding the business context and experience quickly.	P14																	
			2.1.2	F81	Be present, especially Senior and Management levels, involved and care about the business.	P18																	

2.2	RSQ 2.2	How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?																								
2.2.1	IQ12	How do the perceptions of stakeholders differ when conducting IT audits and implementing IT Governance?	2.2.1	F82	Perceptions differ due to subjectivity and objectivity.	P1																				
			2.2.1	F83	Perceptions differ due to experience, skills, culture, background, personality, audit objective, and faultfinding or “policeman” mentality.	P2	P5	P6	P10	P14	P15															
			2.2.1	F84	IT’s strategic importance on the Board’s agenda has substantially improved. The future of IT is also changing, and this all creates different perceptions.	P6																				
			2.2.1	F85	The mandate of the audit determines a difference in perception at the onset.	P7																				
2.2.2	IQ13	What do you think are the perceptions of your Audit stakeholder and how do you shape this perception?	2.2.2	F86	Auditor’s perception of the effectiveness of the control is normally worse than Management.	P1																				
			2.2.2	F87	External Audit’s perception is sceptical and prescriptive. Internal Audit is different; the communication, alignment and making them part a team contribute to positive collective relationship. Internal audit function is seen to add value.	P2	P10																			
			2.2.2	F88	The perception is that they as auditors have to find something. External Audit has a different objective and interest.	P2	P4	P5	P9	P10																
			2.2.2	F89	External Audit and Audit have the wrong understanding of their value proposition.	P3																				
			2.2.2	F90	If you want to understand context as an auditor for this group, you have to fully comprehend and understand context of the vastly different businesses at root (operational) level.	P5																				
			2.2.2	F91	The focus is too much to see if the control is working; the focus is not enough to proof that the control is not working.	P16																				
			2.2.2	F92	External Audit to date has done no or limited contextualisation of audit information, no analysis of that data and no thinking what impact of the business.	P18																				

2.2.3	IQ14	What do you think are the perceptions of your Business stakeholder and how do you shape this perception?	2.2.3	F93	The Business stakeholder normally evaluates risks lower than auditors.	P1																		
			2.2.3	F94	Business perception is that IT is managing the IT part of the audit, with little to no involvement.	P2	P3																	
			2.2.3	F95	The Group's business model of Management buy-in and trust is liberating. In a business model of this Group, there are advances and disadvantages. One of the disadvantages is dependency on great, effective, and efficient management and their ability to lead.	P5																	
			2.2.3	F96	The sentiment from business is sometimes summarised as "audit and leave". Leave my people to do their work.	P16																	
			2.2.3	F97	Business stakeholder audit perception about: External Audit: necessary evil in order to satisfy only one need. Internal Audit: now valued, but this has not always been like that. We will always work hard to keep it that way. Where External Audit is seen as a necessary evil, internal audit is seen as a necessary blessing. Moving from a cost centre as audit to a value-added cost which is not "accounted" because it is worth something, and important for Management.	P18																	
2.2.4	IQ15	What do you think are the perceptions of your IT stakeholder and how do you shape this perception?	2.2.4	F98	IT is normally only IT focused, and not operational. IT's perception is also optimistic.	P1																		
			2.2.4	F99	IT, same as business, thinks that findings and reports need to be balanced and contextual.	P6																		
			2.2.4	F100	Knowing the business and knowing the business process in detail is very important, not only for IT but also to shape any perception and obtain shared understanding.	P3	P8																	
			2.2.4	F101	If we see External Audit as we see Internal Audit in terms of adding value, it would be more engaging. Why do we as Business and IT have that perception? It is because they seem to understand our situation better and they seem willing to add value.	P10																	

			2.2.4	F102	The perception of IT about audit is that it should not be a tick box approach.	P11																		
			2.2.4	F103	IT in the Group in general sees itself as isolated and in this bubble. Doing the right things and work, but not presenting it in a way that resonates or is accepted by Management.	P18																		
2.3	**RSQ 2.3**	**How can technology, particularly an AI Audit System, be used to improve context awareness when conducting IT audits and implementing IT Governance?**																						
2.3.1	IQ16	In what ways can a system such as ALICE understand the context of an entity better?	2.3.1	F104	Context understanding creation before the audit happens in order to facilitate audit by exception, true exceptions rather than “false positives”. Building an audit continuity. This will ensure time is saved.	P1																		
			2.3.1	F105	Through inferences drawn from interactions and feedback received. Learning from interaction with users and making safe assumptions about the context of IT.	P2																		
			2.3.1	F106	The value of a systems understanding context is that the system can be used for more than just an auditing system. It can also be used as a proactive management system to address the controls that improve business processes proactively. Applications identified: • Business intelligence and insights • Business continuity and operationalise IT risk and IT service management • Information and cyber security • Deep structured learning • Automatic or robotic process automation to enable exception reporting and process automation • Machine learning – the study of algorithms and mathematical models that computer systems use to progressively improve their performance of the task	P3	P4	P8	P9	P10	P13													

			2.3.1	F107	It will provide the capability of seeing, measuring many things simultaneously. The capability of information (insights) gathering and centralising information in order to make improved decisions. To enable IT and not just [the] CIO to manage by exception.	P1	P11	P17															
			2.3.1	F108	Safe assumptions that systems of this nature can make based on built-up business history and context in order to save time.	P2	P3																
			2.3.1	F109	Human understanding and contextual awareness fed into ALICE, and this awareness needs to be appropriate at any given point in time for her use to make sense at any given point in time.	P5																	
			2.3.1	F110	To understand context better, ALICE should have an in-depth understanding of the current business, then through historical transactional data analysis and data management and lastly over time build a predictive capability on future trends. The real value of ALICE lies with the system to provide predictions for decision making.	P6																	
			2.3.1	F111	The future of External Audit lies in a system like ALICE, a “smart system” that can address the following three pressures for specifically External Audit: • Costs controls specifically relating to human resources • Near real-time understanding and notice on what’s happening • Time pressures of external auditors to meet the deadline to report • Exception reporting and process automation	P7	P17																
			2.3.1	F112	The audit is of such a nature that control failure is directly and immediately addressed.	P16																	
			2.3.1	F113	Being the trusted source of the truth, being the systems that collect, collate, and store the one version of the truth together with the why’s and the context analysis applied to the information.	P14	P15	P18															

2.3.2	IQ17	What constitutes context understanding with ALICE to you, and what will the benefits of this be for your organisation?	2.3.2	F114	Predictions about audit findings, predictions about risks, controls and advance and continuous management. Benchmarking data about the Group, divisions, industry and other external businesses.	P2																		
			2.3.2	F115	A benefit of ALICE is not only time saving and costs but also the potential insights and management of services.	P3																		
			2.3.2	F116	Audit should be a product of management implementation to improve the business, within Management's control and context understanding addressing real business controls than an archaic snapshot of business snapshot at a point in time.	P4	P6	P15	P17															
			2.3.2	F117	The benefits would be creating a unified business goal understanding, trust, efficiencies, elimination of time to take the audit, and cyber security benefits.	P8																		
			2.3.2	F118	By making dependable assumptions about the situation and context of the Business and IT, she suggests regulations, trends, and evaluations to report on the shortcomings or gaps. Applying the information she gathers from other businesses, internal or external to the Group, to the bank.	P12																		
			2.3.2	F119	Benefits: audit, risk assessment, and trend analysis.	P13																		
			2.3.2	F120	Illustrating context and risk in context diagrams. Company risk profiles coupled to context – illustrating where risk is important in the business context.	P16																		
			2.3.2	F121	In process automation, cost and audit efficiencies.	P17																		
			2.3.2	F122	Being a system with context understanding information that Management longs for and requests.	P18																		
2.3.3	IQ18	What insights would be beneficial from a 'context understood' ALICE audit report?	2.3.3	F123	Exceptions and patterns in controls to improve root cause analysis of problems and issues.	P1	P3	P4	P12	P17	P18													

			2.3.3	F124	Comparison and benchmark insights and information.	P2	P3																	
			2.3.3	F125	Trends analysis and comparison information in order to provide real business value for decision making.	P5																		
			2.3.3	F126	Trends, financial problems, deviation analysis, and different exceptions.	P5																		
			2.3.3	F127	The bigger use for ALICE is the commercial use of the system's connections in order to drive commercial insights for improved decision making.	P7																		
			2.3.3	F128	Risk rated matrix in order for IT to obtain alignment, credibility, and trust together with business. Insights into the business continuity requirements and mitigation controls and presenting these insights into a format that creates business, IT and audit trust.	P8																		
			2.3.3	F129	Cyber and information security insights and proactive norms and exceptions.	P9	P10	P12	P13	P14														
			2.3.3	F130	Privacy and private regulation compliance.	P10	P12																	
			2.3.3	F131	Predictive analysis – for example predict impact of changes before the change is approved.	P11																		
			2.3.3	F132	An automatic quick risk dashboard with exception management and tracking high, medium, and low risks. Risk mitigations and controls all at CIO Executive level reporting.	P12																		
			2.3.3	F133	The monitoring of changes to production environments.	P12																		
			2.3.3	F134	The value of ALICE insights lies in predictive and proactive analysis. ALICE is digital labour. There is no reason why one cannot apply for a post in either 1st, 2nd or 3rd line. The management authorisation must be kept or logged.	P16																		

			2.3.3	F135	The value lies in the consequences of the ineffective controls not being remediated.	P16																				
2.3.4	IQ19	In your opinion, what would you rate as the most important context ALICE could have?	2.3.4	F136	Deductions from all the responses: • *Risk context and appetite* and *Technology context, trends and analysis* were chosen by 9 of the 18 participants • *Organisation and IT strategy alignment* and *Financial context and understanding* were chosen by 8 of the 18 participants • *Organisation and IT strategy alignment* was selected first by most participants – 5 • *Risk context and appetite* was selected first by 4 participants • *Information / cyber security context* was selected second by most participants – 5 • *Risk context and appetite* was selected second by 4 participants	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18
2.3.5	IQ20	In your opinion, what techniques could ALICE use to improve context and audit quality, and ultimately your business process?	2.3.5	F137	Machine Learning techniques.	P2																				
			2.3.5	F138	Through connectors and software licence.	P2																				
			2.3.5	F139	Trust between systems for information is an important consideration.	P2																				
			2.3.5	F140	Reference to historical information and findings in order to create a perception of what is and what is not acceptable.	P4																				
			2.3.5	F141	Benchmarking information and comparison information to be able to measure.	P9																				
			2.3.5	F142	Transaction flows and process flows with coupled risks with timestamps.	P16																				

			2.3.5	F143	Exception reporting, having a system understand the standard report and audit requirements, and having it ready for reporting, but additionally having management and financial dashboards available for exception reporting.	P5	P6	P7	P8															
			2.3.5	F144	Building up context from past and present information in order to build and keep continuity through time stamping. The future model lies in the safe assumption of context, growing context.	P18																		
2.3.6	IQ21	Would you like ALICE to gather this context automatically from the digital data available or would you like to contribute/describe context for your environment (this means that you would be required to input the context directly)…or both?	2.3.6	F145	Seventeen (17) of the 18 participants stated 'Both'.	P11																		
2.3.7	IQ22	Are there any specific context data that you would like ALICE to consider when contextualising risk?	2.3.7	F146	Controls and root cause analysis data.	P1																		
			2.3.7	F147	Historical data and information to influence the business context.	P2																		
			2.3.7	F148	Geographic and geospatial differences and insights in order to make improved decisions.	P3																		
			2.3.7	F149	Financial data, how material and how comfortable the information displayed makes the analyst.	P4																		
			2.3.7	F150	Mitigation technics for expected controls to certain risks. Thus, instead of contextualising risks, ALICE should contextualise the controls for risks.	P7																		
			2.3.7	F151	Business Continuity and Risk Management Matrix showing the context of the business on a page.	P8																		
			2.3.7	F152	Compliance and Regulatory context perspective and environment.	P5	P6	P9	P14															
			2.3.7	F153	Cyber security risk data.	P7	P14	P17																

2.3.8	IQ23	Would you prefer ALICE to describe the context and metric the context or both?	2.3.8	F154	Two (2) of the 18 participants replied with Metric only, where 16 thought to have both metric and description for context.	P14	P15																	

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