How CIOs Engage Boards on Digitisation: The Case of Financial Services Companies in South Africa

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By

Ishe T. Madzime

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ABSTRACT

Boards as custodians of companies have to understand and lead digital transformation. Chief Information Officers (CIOs) can assist with educating and advising the board on digital transformation, but how do CIOs engage boards on the matter? Digitisation is at the heart of the financial services companies. Accordingly, this dissertation focussed on companies in the financial services industry. The main research question for this dissertation is: how do CIOs of South African (SA) financial services companies engage boards on digitisation?

A detailed literature review was conducted which suggested research questions on digitisation, the role of the board and the CIO's, engagement between them, and performance. The interview schedule was based on the foregoing topics. The researcher adopted an interpretivist epistemological perspective to understand digitisation engagements from the perspectives of board members, non-IT executives, and CIOs. The researcher employed a qualitative research method to gain an in-depth understanding of the subject. Fifteen semi-structured interviews were conducted with board members, non-IT executives and CIOs from financial services companies.

Six key themes emerged from the thematic analysis of the interviews, namely: digitisation, the board's role, the CIO's role, non-IT executives' role, digitisation engagement, and value. It's important to note that the non-IT executives' role was an additional role that emerged from the thematic analysis, this role had not been discussed in the literature review. Non-IT executives owned strategy and owned digitisation initiatives. A new Chief Digital Officer (CDO) role also emerged from the thematic analysis as a sub-theme of the CIO's role. The CDO's mandate was to drive company-wide digitisation over and above the CIO's role. Considering the six themes collectively, the three entities (boards, non-IT executives, & CIOs) have a key role to play pertaining to digitisation. The findings suggested that CIOs often engaged the board through board meetings, board committees, and ad-hoc engagements. CIOs often educated the board on digital technologies, digitisation opportunities and digitisation issues. Further, findings suggested that digitisation

engagement influenced value (e.g. responding to digitisation opportunities & issues) rather than performance which was difficult to prove.

The dissertation concludes with methodological, substantive and scientific reflections, and recommendations for practice and future research. The dissertation contributes to the growing body of knowledge on digitisation and demonstrates how the logic espoused in the Complex context of Snowden and Boone's (2007) Cynefin framework can be used to guide how CIOs and boards engage on digitisation.

1 INTRODUCTION

1.1 Rationale

The rationale for this dissertation is to contribute to the exploration and knowledge of how Chief Information Officers (CIOs) engage with boards on digitisation. Digitisation impacts several areas of companies including business models, customer interaction, products, and performance (Baculard, 2017). Given how digitisation is now synonymous with business, company strategies should reflect the unification of business and IT strategy (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013; El Sawy, Kræmmergaard, Amsinck, & Vinther, 2016). The board has a key role to play on digitisation (Bonnet, 2014), so do non-IT executives (Krotov, 2015; Peppard, 2010). The CIO can assist to educate these key actors on digitisation (Valentine, 2014) and sensitise boards to key digital issues for boards to take action on (Weill & Woerner, 2015b), but the question is how do CIOs engage boards on the matter (Coertze & Von Solms, 2014a; MIT Center for Information Systems Research, 2015)?

1.2 Dissertation purpose

The aim of this dissertation is to explore how CIOs of financial services companies engage boards on digitisation in a South African (SA) context.

1.3 Main problem statement

Boards, as custodians of companies, have to understand and lead digital transformation (Weill & Woerner, 2015b). CIOs can assist with their education (Valentine, 2014); advising the board on their response (Weill & Woerner, 2015b) but how do CIOs engage boards on digitisation (Coertze & Von Solms, 2014a; MIT Center for Information Systems Research, 2015)?

1.3.1 *Research questions*

Based on the main problem statement outlined above, this dissertation sets out to answer the following research questions:

1. How has digitisation affected SA financial services companies?
    a) How do board members and CIOs in SA financial services companies define digitisation?
    b) What opportunities has digitisation provided to SA financial services companies?
    c) What issues has digitisation presented to SA financial services companies?
    d) What are the views of strategy (i.e. the alignment view vs the single business strategy view) in SA financial services companies?
2. What are the perceived roles of boards on digitisation in SA financial services companies?
    a) What is the board's role in IT governance?
3. What are the perceived roles of CIOs on digitisation in SA financial services companies?
4. How do CIOs of SA financial services engage boards on digitisation?
5. How have CIO-board engagements influenced company performance?

1.4 Research Method

The researcher adopted an interpretivist epistemological stance – which allowed for understanding a phenomenon based on the view of subjects (Wohlin & Aurum, 2015). This stance is fundamental to qualitative research (Ritchie, Lewis, Nicholls, & Ormston, 2013). Accordingly, this dissertation employed a qualitative research method which facilitated an in-depth understanding of how CIOs engage boards on digitisation. A qualitative research method is appropriate for obtaining an in-depth understanding of a phenomenon (Saunders, Lewis, & Thornhill, 2009).

The researcher conducted 15 in-depth semi-structured interviews from a population that consisted of members of the board, non-IT executives, and CIOs in SA financial services companies. Semi-structured interviews allow for an in-depth understanding of a phenomenon while affording the researcher the freedom to probe interesting concepts (Saunders et al., 2009). Data was thematically analysed using Braun and Clarke's (2006) guidelines for conducting the thematic analysis. Anfara Jr, Brown and Mangione's (2002) criteria for ascertaining research rigour, namely: credibility, transferability, dependability, and confirmability were used to ensure this dissertation's rigour. The dissertation was approved by the UCT Ethics in Research committee to ensure the research satisfied the university's ethical requirements.

1.5 Dissertation context

Digitisation is at the heart of business in the financial services industry (Puschmann, 2017). Technology enables financial services companies to operate (Bankewitz, Aberg, & Teuchert, 2016). Further, financial products and services are digital hence digitisation is particularly applicable in the financial services industry (Cziesla, 2014). Rationally, Bankewitz et al. (2016), and Crotty and Horrocks (2017) advanced that the financial services industry spent significantly on IT. For example, the banking industry typically invested three times more on technology than other industries (Cziesla, 2014). "As the strategic importance of IT in financial services is high, the use of IT has a long history in the financial services industry with banks, insurance companies and other financial intermediaries being early adaptors" (Puschmann, 2017, p. 70).

Given that digitisation is significant in the financial services industry, this dissertation focussed on the finance industry, specifically the industry in SA. Notably, the finance industry of SA was the largest contributor to the country's GDP with 21% in the third quarter of 2016 (Statistics South Africa, 2016) which confirms its significance in SA. The foregoing also motivated the choice of the financial industry.

1.6 Dissertation structure

The rest of the dissertation is organised as follows: Chapter 2 details the literature review, the research questions that were identified therefrom, a framework for engagement and the conceptual framework which diagrammatically represents the literature review section. Chapter 3 outlines the research methodology which mainly details the research philosophy, research method, research process, and validity and reliability considerations. Chapter 4 concerns research findings and answers the research questions identified in Chapter 2 while discussing similarities and differences between the findings and the literature review. Chapter 5 concludes the dissertation by summarising, discussing findings and offering recommendations for practice, theory, and future research. The References and Appendices sections follow Chapter 5.

2 LITERATURE REVIEW

2.1 Literature review introduction

The literature review is organised as follows: the literature search approach outlines how the literature was collated. Next, the different topics are discussed along with the emerging research questions, namely: digitisation (including digitisation opportunities, digitisation issues, & strategy), the board's role, the CIO's role, non-IT executives' role, digitisation engagement, and performance. A framework for engagement is then discussed and finally, a conclusion for the Chapter is provided along with a conceptual framework for the research.

2.2 Literature search approach

Literature was gathered by key word searches against a number of indexing services (Brereton, Kitchenham, Budgen, Turner, & Khalil, 2007; Manikas & Hansen, 2013). The following services were used:

1. Google scholar (www.scholar.google.com)
2. ScienceDirect (www.sciencedirect.com)
3. ACM Digital Library
4. IEEE Xplore
5. Springer Link.

The following search terms/phrases were employed when collating literature (Kitchenham & Brereton, 2013): "digitisation/digitization/digitalisation/digitalization", "Chief Information Officers/CIOs", "boards", "board and CIO engagement" and "board and CIO engagement on digitisation/digitization/digitalisation/digitalization". The researcher followed Manikas and Hansen's (2013) guidance of utilising simple queries to get the maximum number of articles containing the relevant search terms.

Given that different studies refer to different forms of digitisation/digitalization e.g. analogue to digital (Akram, 2013; Katz & Koutroumpis, 2013; Loebbecke & Picot,

2015), and using of digital technologies to reinvent business models to create value (Aron & Waller, 2014), the researcher referred to articles that defined the concept as per the latter definition.

The researcher emulated Manikas and Hansen's (2013) inclusion criteria for the articles collected:

- Literature that focused on digitisation, CIOs' and boards' roles on digitisation, and CIO-board engagements on digitisation. The specified keywords, therefore, needed to at least exist as part of an article's title, abstract or key words.
- Research papers (i.e. published in scientific peer-reviewed journals).
- Rigorous articles from industrial research. In such cases, the researcher often triangulated findings with material synthesised from scientific journals to ascertain validity.
- Articles written in English
- Most articles considered were published between 2014 – 2018, but some older articles were also considered.

2.3 Digitisation

There are different synonyms and definitions of digitisation. Concerning different synonyms, depending on the locale, digitisation can be termed differently. In Europe, the term 'digitalization' is used, while in North America, 'digital transformation' is commonly accepted (El Sawy et al., 2016). The researcher referred to digitisation and digitalization as the same. Digitisation entails digitising business processes, and internal and external interactions in order to create value (Weill & Woerner, 2013). Another definition is that digitisation encompasses the adoption of digital technologies by companies for revenue generation (Bilbao, Dutta, & Lanvin, 2013; Katz, Koutroumpis, & Callorda, 2013). Digital technologies are "understood as an assortment of information, computing, communication, and connectivity technologies" (Leonhardt, Haffke, Kranz, & Benlian, 2017, p. 1). Digital technologies include Social Media, Mobile, Analytics, Cloud computing and Internet

of Things (IoT), collectively termed ‘SMACIT’ (Kates, 2013; Ross, 2014). Alternately, Aron and Waller (2014) referred to digitalization as the use of digital technologies and other emerging technologies to reinvent business models to create value. Business models describe “how an organisation creates, delivers and captures value” (Loebbecke & Picot, 2015, p. 151). This dissertation uses Aron and Waller's (2014) definition as it highlights the changing of business models through digital technologies to create value.

Important to note, business model innovation, and customer engagement are digitisation opportunities (Cziesla, 2014) and are discussed as such in Section 2.4, but these are evident in some of the definitions of digitisation considered herein.

“Just as it took generations to improve the steam engine to the point that it could power the Industrial Revolution, it’s also taken time to refine our digital engines” (Brynjolfsson & McAfee, 2014, p. 8). Craffert, Ungerer, Visser, Morrisson and Claassen (2014) alluded to the fact that succinctly articulating the progression of digitalization can be a daunting task and suggested Aron and Waller's (2014) overview of the progression of digitalization presented in Figure 1. Note, in Figure 1, “We are here” referred to the year 2014, however “the business world is rapidly digitising” (Weill & Woerner, 2015b, p. 1).

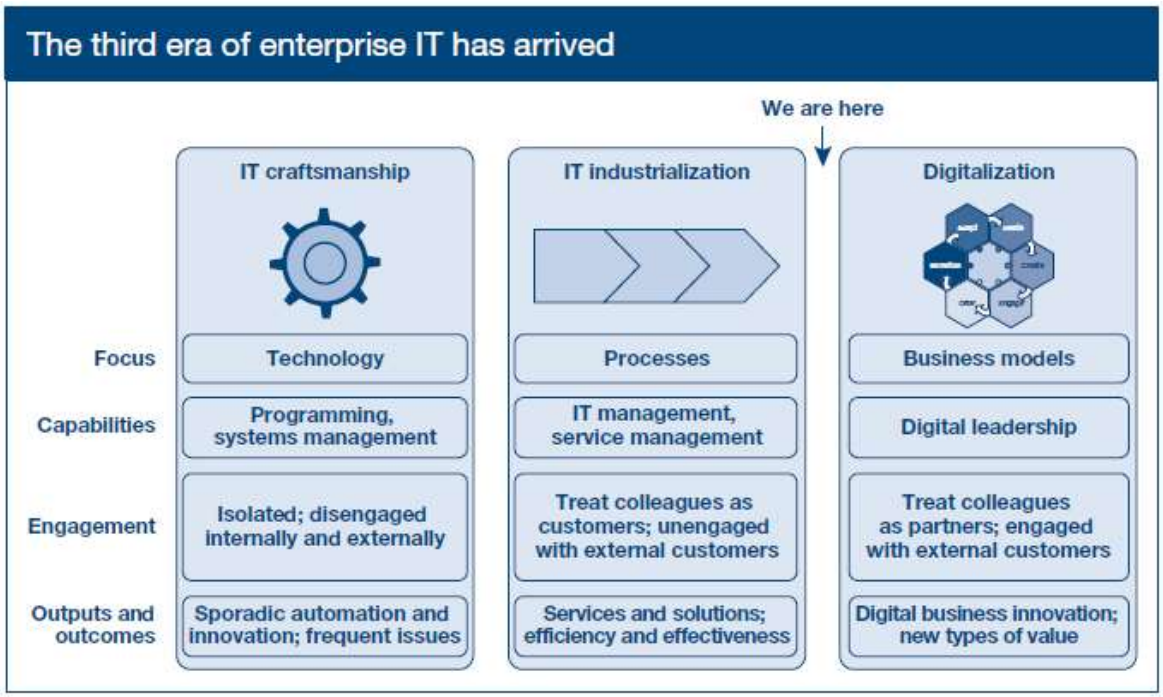

Figure 1: Digitalization eras (Aron & Waller, 2014, p. 1).

With reference to Figure 1, the first era termed **"IT craftsmanship**" spanned the period until 2000. IT's main function in this era was to furnish management with information, and advance business processes through automation (Aron & Waller, 2014; Krotov, 2015). In the IT craftsmanship era, IT was regarded as a support function (Al-Taie, Lane, & Cater-Steel, 2013; Jones, Taylor, & Spencer, 1995).

The second era, **IT industrialisation** commenced with the dot-com boom and bust and was characterised by IT transparency, reliability and standardisation (Aron & Waller, 2014; Craffert et al., 2014). Digital technologies such as Social Media, Mobile, Analytics, Cloud computing, Internet of Things (IoT), and others have since come to the fore (Aron & Waller, 2014).

Digitalization is the third era where businesses utilise digital technologies and other emerging technologies to reinvent their business models (Aron & Waller, 2014). Digitisation isn't exclusive to a company's IT department but rather infused into most business units (Bankewitz et al., 2016; Singh & Hess, 2017) such as production, human resourcing, and product/service sales (Singh & Hess, 2017).

The progression of digitalization through the different eras until the third era where businesses utilise technology to reinvent business models (Aron & Waller, 2014) leads to research question (RQ) one, and its part a:

RQ1: How has digitisation affected SA financial services companies?

RQ1a: How do board members and CIOs in financial services companies define digitisation?

2.4 Digitisation opportunities

Disruption of traditional business models is an innate characteristic of digitisation (Brynjolfsson & McAfee, 2012; Loebbecke & Picot, 2015; Veit et al., 2014) which has presented opportunities as well as threats (Bhimani & Willcocks, 2014; Brynjolfsson & McAfee, 2012; Weill & Woerner, 2015a). Opportunities provided by digitisation are discussed herein.

2.4.1 *Business model innovation*

Digitisation provides innovation opportunities (Lusch & Nambisan, 2015; Westerman & Bonnet, 2015). Digital technologies enable novel business models (Cziesla, 2014; Weill & Woerner, 2014). Person-to-person lending platforms are an example of technology being leveraged to reinvent how money is lent (Cziesla, 2014). Another example is Usage-Based-Insurance (UBI) models - UBI is a business model innovation enabled by IoT (Baecke & Bocca, 2017). UBI entails charging car insurance premiums by factoring driving patterns such as distance, time of driving and more (Husnjak, Peraković, Forenbacher, & Mumdziev, 2015). There are two main implementations of UBI, namely Pay-As-You-Drive (PAYD) and Pay-How-You-Drive (PHYD) (Baecke & Bocca, 2017).

2.4.2 *Customer engagement*

Digital technologies enable novel modes of customer engagement (Cziesla, 2014; Matt, Hess, & Benlian, 2015) such as mobile banking, online insurance purchases (Westerman & Bonnet, 2015) and social media enabled service delivery (e.g. through Facebook & Twitter) (Bharadwaj et al., 2013; Zand, Solaimani, & van Beers, 2015). Numerous companies have begun to offer customers seamless customer experiences via physical and digital channels, attaining notable customer service levels (Westerman & Bonnet, 2015).

“We humans are a deeply social species, and the desire for human connection carries over to our economic lives. There’s an explicitly interpersonal element in many of the things we spend money on” (Brynjolfsson & McAfee, 2015, p. 10). Cognisant of Brynjolfsson and McAfee's (2015) thinking, companies should also factor the “human connection” aspect when considering how to digitise customer engagement.

2.4.3 *Competitive advantage*

Digitisation has had the greatest influence on how companies coordinate and operate to create a competitive advantage (Bilbao et al., 2013; Weill & Woerner, 2015a). BankCo (a prominent global financial company) used an innovative marketing campaign via social media and other channels to drive a strategy to change its reputation and expand its retail banking segment (Bekmamedova & Shanks, 2014). The campaign led to a favourable reputation over competitors and was largely accountable for a 30% increase in retail banking customers (Bekmamedova & Shanks, 2014). To achieve a competitive advantage in the digital era, organisations should inimitably fuse digital technologies into a unique value proposition (Ross, Sebastian, & Beath, 2017).

2.4.4 *Business agility*

Cloud computing affords business agility (Chao & Francisco, 2015). The flexibility provided by cloud-based operating models afford financial institutions the ability to release new products to market faster, thereby ensuring responsiveness (Ghule, Chikhale, & Parmar, 2014). Cloud computing eliminates the need for huge capital outlays on IT infrastructure (Bhimani & Willcocks, 2014; Chao & Francisco, 2015) thus saving set-up time and costs (Ghule et al., 2014) given it enables companies to match computing demand (Bharadwaj et al., 2013; Chao & Francisco, 2015).

2.4.5 *Strategic insight*

Effectively captured and analysed information (e.g. from client interactions) can provide strategic insights to inform a company's actions (Bhimani & Willcocks, 2014). Surprisingly, most companies overlook the possibilities of intricate analytics on their data (Bharadwaj et al., 2013; Sarrazin & Willmott, 2016). Sheer volumes of data from digital technologies put companies at risk of being inundated with data (Gerth & Peppard, 2016). Effective analytics and proper application of insights therefrom may confer companies with a competitive advantage (Sarrazin & Willmott, 2016). A European bank was able to reduce customer churn by 15% after running a targeted campaign based on strategic insights harnessed from machine learning algorithms (Garg, Grande, Miranda, Sporleder, & Windhagen, 2017). Therefore, companies need to leverage data and analytics to glean insights that will timeously inform decisions (Weill & Woerner, 2015a).

The discussed digitisation opportunities (business model innovation, client interaction, competitive advantage, business agility, & strategic insight) demonstrate that digitisation can provide opportunities for businesses. This leads to the second sub-question of RQ1:

RQ1b: What opportunities has digitisation provided to SA financial services companies?

2.5 Digitisation issues

Overemphasis on the "positive side of [digitisation may] desensitise its caveats" (Grover, 2015, p. 6). Digitisation issues identified from the literature are discussed herein.

2.5.1 *The threat of digitisation*

Digitisation introduces threats to companies (Sia, Soh, & Weill, 2016). To illustrate, in the banking industry, the proliferation of digital technologies and heightened customer expectations have availed an opportunity for companies outside the banking industry to provide novel bank-like products (Cziesla, 2014; Watson, 2016). Financial technology (FinTech) start-ups have proliferated globally (refer Figure 2 for FinTech growth) (Dietz, Olanrewaju, Khanna, & Rajgopal, 2015).

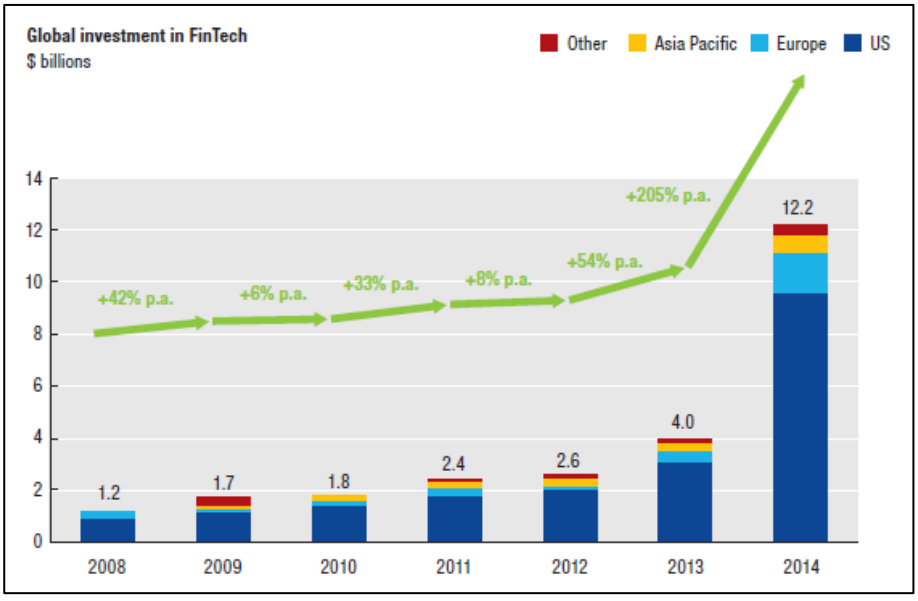

Figure 2: Global investment in FinTech (Dietz et al., 2015, p. 3).

Figure 2 illustrates a trend of gradual growth in FinTech investments worldwide. Between 2010 and 2014, $23 billion was invested in FinTech (Dietz et al., 2015). In recent years, 2012 – 2013 and 2013 – 2014, sharp increases of 54% and 205% were observed and this trend looks set to continue. The apparent focus on FinTech

should only serve as a warning to incumbent financial services companies (Dietz et al., 2015). “Robust attackers are scaling up with incredible speed, artfully positioning themselves between incumbents and their customers zeroing in on lucrative value-chain segments” (Hirt & Willmott, 2014, p. 1). Kodak’s failure to digitally reinvent itself led to its decline (plummeting stock price & loss of market share) which offers admonition that companies need to acknowledge opportunities and threats posed by digitisation and respond appropriately (Lucas & Goh, 2009). Eventually, Kodak’s failure to reinvent itself led to its filing for bankruptcy (Hoong, 2013). Substitute digitised products could negatively impact revenue (Kates, 2013). Blockchain technology can be used to support platforms that offer financial services (e.g. peer-to-peer lending & micro-payments) securely and at a cheaper cost (Lindman, Rossi, & Tuunainen, 2017). New entrants using such technology may pose a threat to incumbent financial services companies (Lindman et al., 2017). Puschmann (2017) suggested blockchain based payment platforms as a disruptive innovation given that consumers can transact without a traditional bank.

2.5.2 *Security*

Security has been a key IS management concern since 2003 (Luftman et al., 2015). “A company’s value is no longer just linked to employees, physical goods, and property, but now encompasses a vast array of digital assets” crucial to business operations (Hopkins, 2013, p. 215). Some examples of critical and valuable digital assets include systems (e.g. payroll systems) and data (e.g. bank accounts & business plans) (Hopkins, 2013). Digital technologies such as cloud computing and mobile technology accentuate the need for continued emphasis on security (Luftman et al., 2015). Data loss and suspension of company operations are examples of possible cyber-attack consequences which ultimately result in a financial loss (Yayla & Hu, 2014). Further, cyber-attacks can negatively impact a company’s reputation (Rogers, 2016). To redress the security concern, companies should employ security policies and practices that address Confidentiality, Integrity and Availability - the CIA triad (Merkow & Breithaupt, 2014). The CIA triad has

served for a number of decades as a computer security conceptual model and is popular among IS practitioners (Cherdantseva & Hilton, 2013).

2.5.3 *Technological unemployment*

Digitisation induces technological unemployment (Arthur, 2011; Brynjolfsson & McAfee, 2014; Loebbecke & Krcmar, 2014). Demand for mundane tasks has been declining owing to digitisation, while demand for non-routine work has remained comparatively steady (Brynjolfsson & McAfee, 2014). However, Bilbao et al. (2013) stated that digitisation redressed unemployment. Kenney and Zysman (2015, p. 8) weighed both perspectives on technological unemployment and concluded: "the question really is what balance will there be between jobs created as the digital wave flows through our economy and society and what jobs will be displaced?" Machines are ineffective in random settings as they are devoid of intuition or imagination (Brynjolfsson & McAfee, 2012). Contrastingly, people have intuition and imagination which bestows prospects of a complementary alliance (Brynjolfsson & McAfee, 2012). Business leaders "should think about developing new business models and processes that combine workers with ever more powerful technology to create value" (Brynjolfsson & McAfee, 2012, p. 58). Further, leaders could assist employees to develop relevant skills to stem redundancy (Brynjolfsson & McAfee, 2015).

2.5.4 *Increased reliance on IT*

The availability and reliability of IT systems is non-negotiable for digitised business operations (Luftman et al., 2013). System downtime suspends sales where manual circumventions are not feasible (Andersson & Tuddenham, 2014). Executive management needs to ensure that resilient systems are implemented as well as a suitable Business Continuity Management (BCM) plan (Peterson, 2009). BCM entails "a holistic management process that identifies potential impacts that threaten an organisation and provides a framework for building resilience and the capability for an effective response that safeguards the interests of its key

stakeholders, reputation, brand and value creating activities" (Peterson, 2009, p. 114).

Companies need to recognise the opportunities and threats presented by digitisation and implement optimal measures to be competitive (Lucas & Goh, 2009). The identified digitisation issues from the literature give rise to the third sub-question of RQ1:

RQ1c: What issues has digitisation presented to SA financial services companies?

2.6 Strategy

The alignment view entails "thinking of IT strategy as a functional-level strategy - aligned but essentially subordinate to business strategy" (Bharadwaj et al., 2013, p. 472) and has been a dominant view of IT strategy (Bharadwaj et al., 2013; Kahre, Hoffmann, & Ahlemann, 2017). In the IT craftsmanship and IT industrialisation eras, business strategy directed IT strategy (Bharadwaj et al., 2013).

In the digital era where digital technologies have significantly shaped business models and even industries, the alignment view ceases to provide an adequate 'strategic posture' (Kahre et al., 2017, p. 4708). Digital technologies are now infused in business, hence company strategy should resonate with this fusion – a digital business strategy (DBS) (Bharadwaj et al., 2013; El Sawy et al., 2016). Bharadwaj et al. (2013, p. 472) defined a DBS as "organizational strategy formulated and executed by leveraging digital resources to create differential value." Bharadwaj et al. (2013) identified four main aspects to be considered concerning the DBS:

Scope: the DBS should be viewed as the business strategy and not subordinate to the business strategy in the digital era. **Scale** needs to be considered in both physical and digital contexts in a DBS. **Speed** assumes a focal role in DBS environments especially in the context of "decision making, product launches, supply chain orchestration and partnership formation" (Bharadwaj et al., 2013, p.

476). **Sources of business value creation and capture**: the DBS introduces facets that modify how business creates and captures value.

Kane, Palmer, Philips, et al. (2015) found that the strengths of a DBS emerge from how companies formulate strategies to integrate digital technologies to reinvent business – and not through the digital technologies themselves. Additionally, pursuing a DBS enables organisations a means to harness the DBS to respond to digitisation opportunities and threats (Kahre et al., 2017; Sia et al., 2016).

The section on strategy considered the two views of strategy, the alignment view and the DBS view. This raises the fourth sub-question of RQ1:

RQ1d: What are the views of strategy (i.e. the alignment view vs the single business strategy view) in SA financial services companies?

2.7 The board's role

2.7.1 *Corporate governance*

The board is "the governing body with legal accountability for governance oversight across an enterprise" (Valentine, 2016, p. 21). "Corporate governance refers to the system of structures, rights, duties, and obligations by which the board and executive management direct and control a corporation" (Coertze & Von Solms, 2014b, p. 4). The King report represents the corporate governance framework in South Africa (Gachie & Govender, 2017). At the time of writing, the latest version of the King report was the King IV report (Gachie & Govender, 2017; Le Riche, Erasmus, Hoy, & Mazzocco, 2016).

Institute of Directors South Africa's (2016, p. 21) espoused the following as the "[board's] primary governance role and responsibilities:

- Steers and sets strategic direction
- Approves policy and planning
- Oversees and monitors implementation by management

- Ensures accountability for organisational performance by means of among others reporting and disclosure."

2.7.2 *Protecting stakeholder interests*

The board has a legal and moral duty to protect the interests of a company's stakeholders (Weill & Woerner, 2015b). Stakeholders refer to " … groups or individuals that can reasonably be expected to be significantly affected by an organisation's business activities, outputs or outcomes, or whose actions can reasonably be expected to significantly affect the ability of the organisation to create value over time" (Institute of Directors South Africa, 2016, p. 17). Boards must meet stakeholder expectations with regard to the company's competitiveness, credibility, risk management and environmental conservation (Valentine, 2016).

2.7.3 *Board digital leadership*

The board's role is progressing to include technology governance which is central to corporate governance (Valentine & Stewart, 2015). "IT governance is the responsibility of the board of directors and executive management. It is an integral part of enterprise governance and consists of the leadership and organisational structures and processes that ensure that the organisation's IT sustains and extends the organisation's strategies and objectives" (IT Governance Institute, 2003, p. 10). The foregoing meaning underscores the significance of the board's role pertaining to IT governance (Benaroch & Chernobai, 2017). It also separates the responsibilities of the board and executive management concerning IT governance: directors govern IT while management implements the governance framework (Jewer & Mckay, 2012).

"Digital transformation is about a careful transition between the old and the new, balancing risk management, value creation and long-term sustainability, which are precisely the key roles of boards" (Bonnet, 2014, para. 7). Incongruously, there's a "board IT attention deficit" (Benaroch & Chernobai, 2017; Coertze & Von Solms, 2014a). Countless boards do not lead their company's digital endeavours in favour

of assigning such initiatives to CIOs (Gerth & Peppard, 2016; Valentine & Stewart, 2015). Some board members are naïve and lack surety when tackling digitisation (Coertze & Von Solms, 2014a). Boards need to become digitally astute in order to be able to sense opportunities and issues stemming from digitisation (Sarrazin & Willmott, 2016).

Boards must ensure business profitability and viability (Weill & Woerner, 2015b). The three aspects of the board's role concerning digital leadership are shown in Figure 3 i.e. "directing value creation", "governing risk and compliance" and "leading strategy and performance" which combined enable boards to meet their overall fiduciary responsibility (Valentine, 2016). Importantly, value creation, risk governance and strategic leadership dynamically interact to exhibit competent digital leadership (Valentine, 2016).

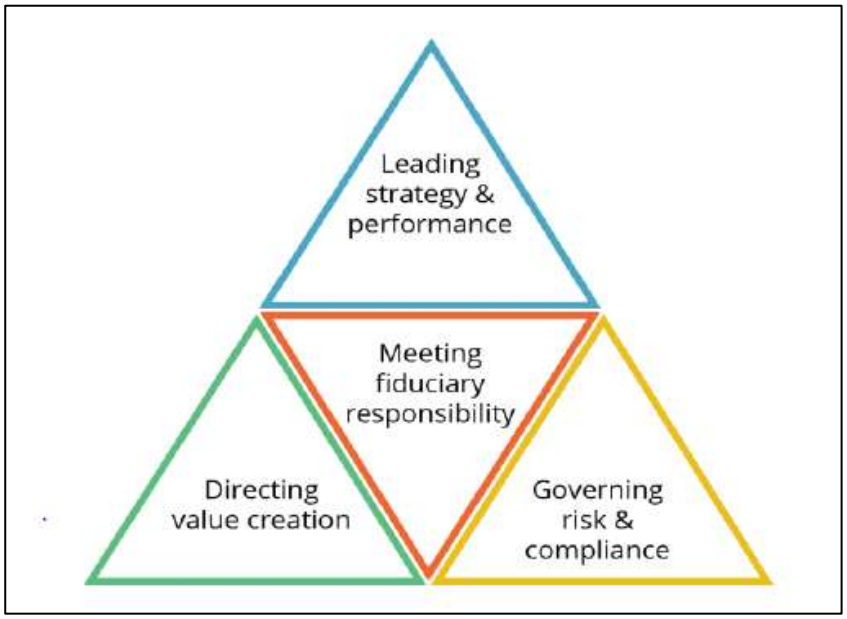

Figure 3: Board's interdependent roles in digital leadership (Valentine, 2016).

The plausible leadership of digitisation initiatives needs to include the board (Valentine & Stewart, 2015). "Digitally mature boards that provide competent and comprehensive digital leadership, financially outperform their peers by 9%, are up to 26% more profitable, and enjoy up to 12% greater market valuation" (Valentine & Stewart, 2015, p. 4513). Boards should consider themselves as catalysts for a

company's digitisation efforts (Sarrazin & Willmott, 2016). Boards should support digitisation by sponsoring initiatives (Sarrazin & Willmott, 2016), authorising crucial decisions (Turel & Bart, 2014) and championing the successful implementation of digitisation initiatives (Valentine & Stewart, 2015).

Coertze and Von Solms (2014a) not only alluded to the importance of board involvement in IT matters but also offered the sobering thought that boards will most likely never morph into genuine IT specialists. However, CIOs are digital experts (Kark, Lewris, & Brown, 2017) who can educate the board (Valentine, 2014).

The discussion on the board's role encompassed corporate governance, protecting stakeholder interests and digital leadership. These aspects give rise to the second research question and its corresponding sub-question:

RQ2: What are the perceived roles of boards on digitisation in SA financial services companies?

RQ2a: What is the board's role in IT governance?

2.8 The CIO's Role

2.8.1 *Leadership*

The CIO's role has gained importance in line with IT's increased organisational role (Chun & Mooney, 2009; Liu, 2016). CIOs of the IT craftsmanship era were mostly IT managers and represented cost centres (Chun & Mooney, 2009). Present-day CIOs should focus on being business leaders as opposed to IT managers (Hodgson & Lane, 2010; Krotov, 2015). CIOs of the digitisation era often employ their juniors to tend to technical aspects of their roles (Hodgson & Lane, 2010) allotting more time to non-technical issues (Luftman et al., 2013). In order to attain strategic objectives, the CIO needs to possess the ability to influence peers and lead strategic IT initiatives (Krotov, 2015). Enns, Huff and Golden (2003, p. 480) found

that “top executives (including CIOs) do not rise to the top without having some ability to influence others.”

2.8.2 *Business knowledge*

“The CIO is an information systems executive whose role is deeply embedded in business, helping CEOs [and boards] strategize and business unit leaders to implement strategies” (Hodgson & Lane, 2010, p. 259). The intrinsic nature of IT has progressed from support to that of an “innovative business partner” (Coertze & Von Solms, 2014a, p. 4429). As a result, a number of companies have acknowledged the need for a CIO adept at bridging the gap between business and IT (Coertze & Von Solms, 2014a). CIOs’ business acumen combined with technical acuity enables them to adequately steer transformation through technology (Chun & Mooney, 2009; Li & Tan, 2013). Benlian and Haffke's (2016) call for CIO’s to extend their business knowledge serves as evidence of the need for CIOs to have intimate business knowledge. One CIO in Peppard's (2010) study advanced that at board level, they were expected to be conversant in other business topics such as general management, human resources, finance, and regulation.

2.8.3 *Technology*

Ding, Li, and George (2014) posited that the CIO needed to create and execute technology focused strategies that harnessed digital technologies and data to confer value to the company. Further, Ding et al. (2014) purported that CIOs needed to create and execute an IT strategy that was harmonious with a company’s business strategy.

CIO technology competence is a prerequisite for delivering meaningful value (Correia & Joia, 2014; Krotov, 2015; Liu, 2016). CIOs should demonstrate astuteness in delivering a company’s IT services to be considered as worthy contributors to business strategy (Gerth & Peppard, 2016). Delivery of stable IT infrastructure strengthens a CIO’s credibility in an organisation (Correia & Joia, 2014). Technology competent CIOs are better placed to “… guide the architecture

of an IT infrastructure that will be a strategic option for the business" (Smaltz, Sambamurthy, & Agarwal, 2006, p. 211).

2.8.4 *CIO digital leadership*

The CIO leads enterprise digitisation and is customarily tasked with ensuring that the company profits from digitisation (Gerth & Peppard, 2016). CIOs must be attentive to the immediate business climate and its likely future prospects to recognise key junctures to advise boards to take action (Weill & Woerner, 2015b). Chandhoke, Dreischmeier, Rehberg, and Pasini (2015) advanced that CIOs should possess extensive strategic knowledge and the aptitude to effectively advise boards on digitisation matters.

2.8.5 *Education*

As digital experts, CIOs are aptly placed to provide education pertaining to digitisation's hype, opportunities and issues (Kark et al., 2017). CIOs could educate the board and non-IT executives on digitisation's opportunities and threats (Valentine, 2014). By educating the board on technology matters, the board are better equipped to make informed business and strategic decisions (Kark et al., 2017). Similarly, educating executives on digitisation redresses their naivety on digital matters (Reinhard & Bigueti, 2013). "Effective communications with and education of the board to establish and expand the shared knowledge about IT and its strategic role in the company and industry are thus essential for being a successful CIO" (Yayla & Hu, 2014, p. 427).

Having outlined the CIO's role which entailed leadership, business knowledge, technology, digital leadership, and education, research question three emerged:

RQ3: What are the perceived roles of CIOs on digitisation in SA financial services companies?

2.9 Digitisation engagement

2.9.1 *Engagement complexity*

“The world itself and anything we call ‘reality’ is complex – this is even more true, in case human beings are involved” (Czinki & Hentschel, 2016, p. 28). Accordingly, Czinki and Hentschel's (2016) assertion infers that CIO-board engagements can be viewed as complex. To illustrate the complexity, “… much debate today still exists as to when and how these two entities [i.e. boards and CIOs], in addition to any supporting mechanisms, should interact within the organisational sphere” (Coertze & Von Solms, 2014a, p. 4430).

2.9.2 *Digitisation topics to discuss*

Digital efficacy is nominal among some board members and this encumbers their capability to effectively leverage digital technologies (Sarrazin & Willmott, 2016). Boards need to be digitally competent to provide effective IT governance (Jewer & Mckay, 2012; Valentine & Stewart, 2015; Yayla & Hu, 2014). “With IT so persuasive in business and social life, and offering numerous opportunities for creating and sustaining competitive advantage, all C-suites need to become chief digital officers” (Krotov, 2015, p. 282). Given the CIO is business and technology conversant (Li & Tan, 2013), CIOs could educate the board and non-IT executive management on digitisation’s opportunities and threats (Valentine, 2014). Other topics of engagement should include strategy (Bankewitz et al., 2016; Sarrazin & Willmott, 2016), particularly combing IT strategy and business strategy (Bankewitz et al., 2016), risk and the potential value of digitisation in a company’s context (Sarrazin & Willmott, 2016). Extrapolating from the IT Governance Institute's (2003) definition of IT governance, IT governance matters are central to CIO-board engagements.

The board agenda should not be static but rather resonate with the evolving business landscape (Bankewitz et al., 2016). Accordingly, board members “need to sense and identify the topics that can potentially impact the sustained competitive

advantage of the company and bring them to the agenda" (Bankewitz et al., 2016, p. 64).

2.9.3 *When engagements should occur*

CIOs that do not frequently engage with the board court risk (Valentine, 2016). Consequently, CIO board engagements need to be frequent enough to remain in tune with market trends and the speed of disruption (Sarrazin & Willmott, 2016). A protocol needs to be observed for effective CIO-board engagements i.e. a conducive environment and defined communication expectations e.g. board briefings (Valentine, 2016). Sarrazin and Willmott (2016) also suggested that new board members need to be on-boarded to ensure their effective participation from when they are appointed.

2.9.4 *Engagement nuances*

CIOs labour to explain technical matters in a manner that the CEO can comprehend, and importantly a manner that inspires them to action (Krotov, 2015). The foregoing logic can be extended to the board. For effectual CIO-board engagements, CIOs should converse in business terms and appreciate business processes and models (Benlian & Haffke, 2016; Correia & Joia, 2014; Gerth & Peppard, 2016). Awareness of business and industry issues bolster a CIO's credibility when engaging with the board (Benlian & Haffke, 2016; Sarrazin & Willmott, 2016). The CIO could refine topics to be discussed by liaising with the CEO (Chandhoke et al., 2015). Collaborating with the CEO not only facilitates board access where the CIO has none but ensures the CIOs avoid potential conflicts with a likely influential ally in board engagements (Chandhoke et al., 2015). Further, by leveraging digitally competent board members, CIOs could tailor presentations to match the board's level of IT knowledge in order to attain the perfect balance between educating and informing (Chandhoke et al., 2015). CIOs should effectively communicate the potential value of digitisation through means such as practical demonstrations of technology which could invoke a much more profound impact

than a presentation ever would (Chandhoke et al., 2015). By illustrating tangible value from IT investments, CIOs build the board's IT acumen (Gerth & Peppard, 2016).

While Charan (2017) was referring to CEOs when he suggested that they could alternatively leverage external parties to articulate their opinions of the future of digitisation to the board to stimulate urgency, the same thinking could be transposed as an avenue that CIOs could explore in board engagements. Charan (2017) gave an example where the Singtel's board engaged with companies in the Silicon Valley, Massachusetts Institute of Technology (MIT) academics, and other industry leaders to understand how the company could respond to disruptive threats. Ultimately, this resulted in a realisation of how Singtel needed to respond as a digital company (Charan, 2017).

Overall, effective engagement with the board enable boards to extract the key issues around IT and its value ensuring CIOs channel more time towards driving IT as opposed to defending it (Chandhoke et al., 2015). "CIOs should look for ways to build a rapport with and earn the trust of the board", (Chandhoke et al., 2015, p. 3). By discussing pertinent IT issues, CIOs create shared understanding with the board around these key issues (Chandhoke et al., 2015). Engagements should be monitored and assessed for effectiveness to inform remedial action (Gerth & Peppard, 2016). Summing up, the researcher refers to a remarkable statement by Gerth and Peppard (2016, p. 69): "The CIO can only deliver what he or she is allowed to deliver. Organizations get the IT they deserve".

The digitisation engagement topic surfaced the following key issues: engagement complexity, digitisation topics to discuss, when engagement should occur and nuances of engagement. Factoring this, research question 4 emerged:

RQ4: How do CIOs of SA financial services engage boards on digitisation?

2.10 Performance

Organisational performance concerns an organisation's health in terms of three dimensions: 'financial, systemic and social'. 'The financial performance dimension focuses on wealth maintenance and creation; the systemic performance dimension focuses on survival and growth and the social performance dimension captures organisations' responses to societal expectations.' (Turel & Bart, 2014, p. 225). The systemic and social dimensions are implied in financial performance (Turel & Bart, 2014).

Yayla and Hu (2014) found that the boards' awareness of technology had a significant positive impact on performance. The board providing direction to executives through "questions" and "requests" on IT stemming from engagements influence performance and add value (Turel & Bart, 2014). By boards probing executives to respond to digitisation opportunities, addressing digitisation issues, a company could also realise a competitive edge (Fitzgerald, Kruschwitz, Bonnet, & Welch, 2013). However, it's important to note that in some instances, attempting to quantify returns of digital investments (ascertaining performance) may be intricate (Fitzgerald et al., 2013).

The performance theme led to the following research question:

RQ5: How have CIO-board engagements influenced company performance?

2.11 Framework

Many frameworks were considered concerning CIO-board engagements, the researcher deemed Snowden and Boone's (2007) Complex context of the Cynefin framework apt. Traditional sequential approaches of solving problems such as "*target definition - analysis - ideation - selection - implementation*" are not sufficient to tackle the complexity in an unpredictable world (Czinki & Hentschel, 2016, p. 28). Since its inception, the Cynefin framework (Figure 4) has been employed in management, IT-design and project management among other disciplines (Czinki

& Hentschel, 2016). The Cynefin framework categorises challenges that leaders face into five contexts (Czinki & Hentschel, 2016; Snowden & Boone, 2007).

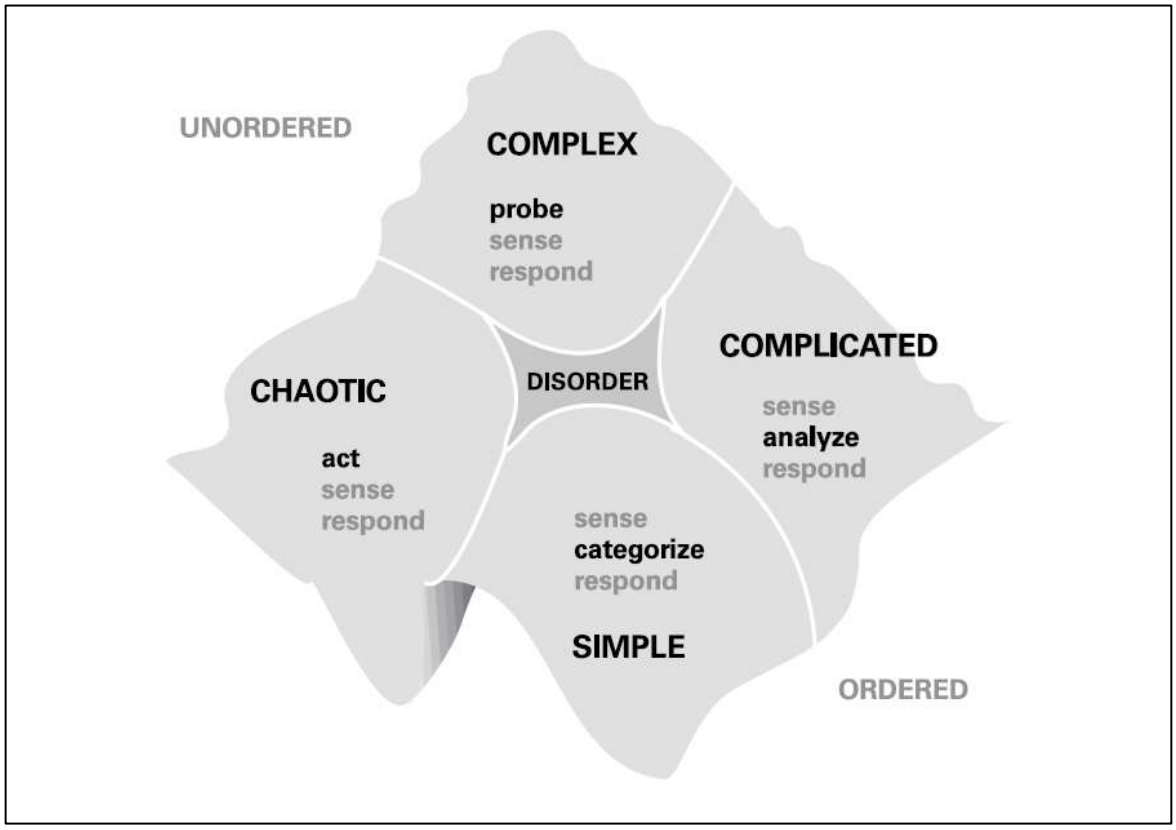

Figure 4: Cynefin framework (Snowden & Boone, 2007).

Simple contexts have apparent cause-and-effect relationships and decisions are made post sensing a given situation, categorising it and responding based on established best practice (Snowden & Boone, 2007). Persisted complacency precedes chaos hence the bordering of the simple and **chaotic contexts** (Snowden & Boone, 2007). **Complicated contexts** similarly have visible cause and effect relationships but several decisions are possible. Accordingly, decisions are arrived at by sensing a situation, analysing it and responding based on good practice as opposed to best practice (Czinki & Hentschel, 2016). **Complex contexts** are understood in retrospect. Experiments are required to establish solutions (decisions) therefore leaders need to probe, sense, and respond (Snowden & Boone, 2007).

By stating that “the world itself and anything we call ‘reality’ is complex – this is even more true, in case human beings are involved” (Czinki & Hentschel, 2016, p. 28), Czinki and Hentschel's (2016) assertion infers that CIO-board engagements can be viewed as complex. First, companies could experiment with different initiatives to orient strategic direction pertaining to digitisation (Fitzgerald et al., 2013). Extending upon Fitzgerald et al.'s (2013) thinking, in situations where topics on digitisation may not make sense, the CIO could lead experiments on such topics to ascertain (or probe) their worthiness of board discussions pertaining to a strategy that factors in digital. Gerth and Peppard (2016) suggested that CIOs could experiment with dissimilar means to influence other executives – this logic could be applicable to CIOs as they could experiment with different means of engagement when in question. Charan (2017) demonstrated how engagements with external parties could aid engagements. Second and third Bankewitz et al. (2016, p. 64) called for board members as key decision makers “to adapt their agendas to the constantly changing strategic context and changing business environments.” To achieve this malleability in the board agenda, “boards need to **sense and identify** the topics that can potentially impact the sustained competitive advantage of the company and bring them to the agenda” (Bankewitz et al., 2016, p. 64). Bankewitz et al.'s (2016, p. 64) suggestion to “sense and identify topics” reflects the thinking of “sensing and responding” in Snowden and Boone (2007) ‘Complex’ context of the Cynefin framework. Extending on this, CIO’s and boards can assimilate the logic of the Snowden and Boone's (2007) Complex context of the Cynefin framework in order to engage the board on digitisation.

2.12 Conclusion of Literature Review

2.12.1 *State of literature*

Cognisant of Aron and Waller's (2014) articulation of the progression of digitalization, the subject is indeed still a relatively new topic (Cziesla, 2014). Academics allude to the fact IT should not be viewed as subordinate to business but rather the two should be considered with similar weighting to drive strategic

direction (Bharadwaj et al., 2013; Chun & Mooney, 2009; Hodgson & Lane, 2010). Overall, digitisation is a pertinent issue that needs company leaders' attention (Ganguly, 2015; Weill & Woerner, 2015a).

2.12.2 *Research gaps*

The literature review identified some gaps, in particular, Valentine and Stewart (2015) advanced that boards are not conversant in digital technologies and yet Valentine (2016) advanced that part of the board's role entails digital leadership. CIOs can assist to educate boards on digitisation (Valentine, 2014) but little is known about how the two parties engage on technology matters (Coertze & Von Solms, 2014a).

The section on the 'State of literature' identified the novelty of digitisation. Accordingly, this dissertation contributes to the body of knowledge by exploring digitisation, and digitisation engagements specifically in financial services companies in SA.

2.12.3 *Research questions*

The literature review surfaced the following questions:

1. How has digitisation affected SA financial services companies?
    a. How do board members and CIOs in SA financial services companies define digitisation?
    b. What opportunities has digitisation provided to SA financial services companies?
    c. What issues has digitisation presented to SA financial services companies?
    d. What are the views of strategy (i.e. the alignment view vs the single business strategy view) in SA financial services companies?

2. What are the perceived roles of boards on digitisation in SA financial services companies?
    a. What is the board's role in IT governance?
3. What are the perceived roles of CIOs on digitisation in SA financial services companies?
4. How do CIOs of SA financial services engage boards on digitisation?
5. How have CIO-board engagements influenced company performance?

2.12.4 *Conceptual framework*

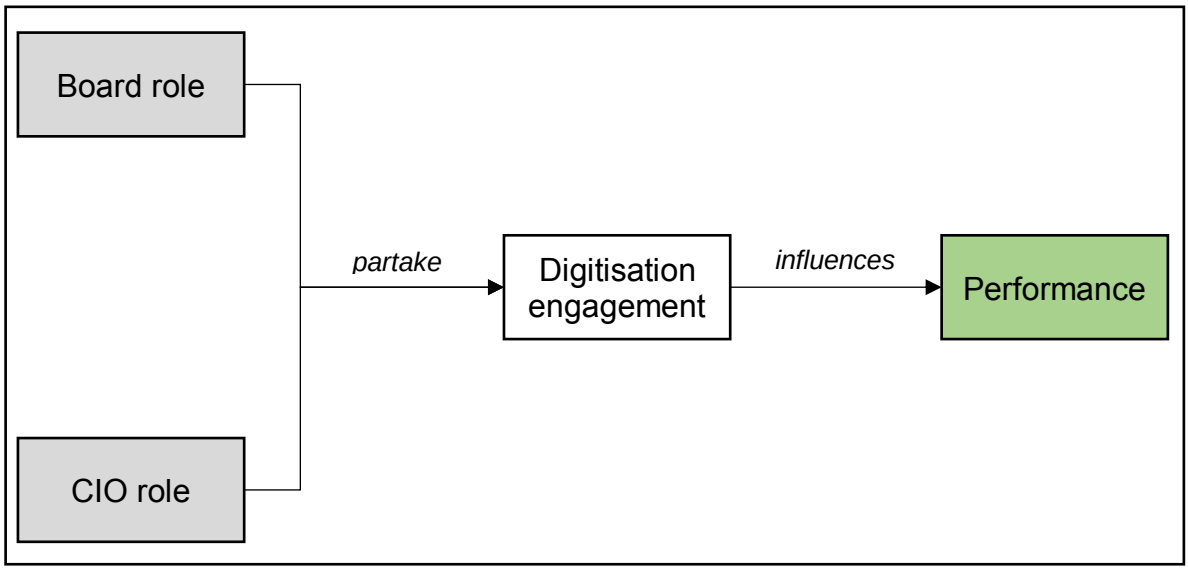

Figure 5: Conceptual framework.

Figure 5 shows the conceptual framework for this literature review. Essentially, it encapsulates engagements on digitisation by the CIO and the board, and how their engagement influences company performance. The focus of this dissertation concerned digitisation engagement by the board and the CIO, as such performance resulting from such engagements, was not investigated in detail.

3 RESEARCH METHODOLOGY

This section details the research methodology which begins by outlining the research philosophy, the research approach, and the research method. Next, the Chapter discusses the research process, ethics, assumptions and limitations, and then concludes with the criteria used to ensure the dissertation's rigour.

3.1 Research philosophy

Bhattacherjee (2012), and Saunders et al. (2009) posited that there are two stances concerning research philosophy, namely ontology and epistemology. The different stances influence the way a researcher considers the research process (Saunders et al., 2009).

3.1.1 *Ontology*

Ontology entails how a researcher perceives the world (Bhattacherjee, 2012; Saunders et al., 2009). There are two ontological stances, namely objectivism and subjectivism (Saunders et al., 2009). Objectivism accepts that "social entities exist in reality external to social actors concerned with their existence" while subjectivism asserts "that social phenomena are created from the perceptions and consequent actions of those social actors concerned with their existence" (Saunders et al., 2009, p. 110). The researcher perceived that CIO-board engagements could be studied based on the perceptions of social actors (i.e. boards, non-IT executives, & CIOs), therefore the researcher adopted a subjectivist ontological stance.

3.1.2 *Epistemology*

Epistemology concerns a researcher's beliefs about how to most suitably study the world (Bhattacherjee, 2012). Klein and Myers (1999), and Van Zyl (2015) identified three epistemological perspectives in IS research, namely positivism, interpretivism, and critical realism. Positivism "recognises (universal) facts and

observable, empirical phenomena", while interpretivism acknowledges that reality "is subject to different interpretations which are understood through the exploration of subjective meaning" (Van Zyl, 2015, p. 3). Critical realism concerns critiquing and redressing social disparity and aims to liberate a beleaguered societal group through surfacing and evaluating underlying societal inconsistencies and their causes (Bhattacherjee, 2012).

The researcher sought to understand digitisation engagements based on the perspective of board members, non-IT executives, and CIOs. Given interpretivism purposes to understand a phenomenon based on the views of subjects (Wohlin & Aurum, 2015), an interpretivist perspective was appropriate for this dissertation. Positivism and critical realism as epistemological perspectives were inappropriate as positivism regards widespread facts and observable empirical events (Van Zyl, 2015) while critical research critiques and addresses social disparity (Bhattacherjee, 2012).

3.2 Research Approach

Research methods are classified as qualitative, quantitative, and mixed methods (i.e. a combination of quantitative and qualitative methods) (Cavana, Delahaye, & Sekaran, 2001; Saunders et al., 2009). An interpretivist epistemological stance is fundamental to qualitative research (Ritchie et al., 2013). A qualitative research method is apt for gaining comprehensive knowledge concerning a phenomenon (Saunders et al., 2009) from the perspective of respondents (Wohlin & Aurum, 2015). While qualitative research considers the collection of data qualitatively (e.g. documentation & interviews), quantitative research leverages quantifiable data (Wohlin & Aurum, 2015). A quantitative research method was discounted for this dissertation as it would not enable the researcher to gain an in-depth understanding (Saunders et al., 2009) of digitisation engagement. Accordingly, a qualitative research method was employed to acquire detailed knowledge of how CIOs engage boards on digitisation from respondents' perspective.

3.3 Research Method

Given the researcher followed a qualitative research approach as elucidated in the foregoing section, the researcher only considered qualitative data collection methods (observation, interviews, & documentation) (Wohlin & Aurum, 2015). For this dissertation, collecting non-verbal data would not permit the researcher to gain in-depth insights into CIO-board engagement on digitisation from the respondents' perspective. Wohlin and Aurum (2015), stated that interviews enable researchers to extract respondents' views on a research topic (Wohlin & Aurum, 2015). Accordingly, the researcher deemed interviews as the appropriate method to collect data.

Categories of interviews include: structured, semi-structured, and unstructured (Saunders et al., 2009; Wohlin & Aurum, 2015). Structured interviews use an inflexible set of questions (Myers & Newman, 2007; Saunders et al., 2009) and can be employed to gather measurable data (Saunders et al., 2009). Semi-structured interviews use theme oriented questions and afford a researcher the flexibility to either probe interesting aspects emanating from discussions or exclude certain questions (Saunders et al., 2009). Unstructured interviews are casual with no set of questions to guide discussions (Saunders et al., 2009). The researcher discounted structured interviews as questions are fixed (Myers & Newman, 2007) and closed-ended (Wohlin & Aurum, 2015) which might not enable in-depth elicitation. Unstructured interviews are 'fluid' and enable in-depth study of an area (Saunders et al., 2009) and were considered too broad for this dissertation. Semi-structured interviews were deemed suitable as these are reasonably focused i.e. theme oriented with flexibility for the researcher to adapt the questions depending on the context (Saunders et al., 2009). Theme oriented questions were an important consideration as this enabled the researcher to understand other themes relevant to engagement e.g. digitisation (the subject of engagements), the various parties' roles partaking in engagements, and performance (as a consequence of engagements).

3.4 Sampling

Sampling concerns the selection of respondents out of a population of interest (Wohlin & Aurum, 2015). The population considered for this dissertation consisted of board members, non-IT executives, and CIOs of SA financial services companies.

3.4.1 *Sample size*

The choice of sample size was underpinned by several factors, namely: the researcher's epistemological stance (interpretivism) (Boddy, 2016), the type of research (qualitative) (Mason, 2010), time and money constraints (Saunders et al., 2009), as well as saturation (Mason, 2010). A sample representative of the populace is necessary for a positivist stance, while the foregoing is not the case for interpretive studies (Boddy, 2016). By and large, qualitative research has smaller samples as compared to quantitative studies due to its laborious nature, emphasis on meaning, and saturation (Mason, 2010). The researcher also had a limited time frame for the project (Saunders et al., 2009) and couldn't collect data ad infinitum. The researcher was cognisant of the fact that an increasing number of interviews would at some point result in diminishing returns relative to discovering new themes (Mason, 2010).

Considering the foregoing, the researcher conducted fifteen in-depth semi-structured interviews. After thirteen interviews, there was a noticeable diminishing return concerning unearthing new themes. Thomas (2006) noted that the absence of new themes as a study concludes could suggest that the key themes had been unearthed. The researcher also sought ratification from other similar studies pertaining to sample size. Parent and Reich (2009) carried out seventeen semi-structured interviews in their qualitative explorative research, "Governing Information Technology Risk". Singh and Hess (2017) conducted ten semi-structured interviews, in a study exploring the CDO's role. The foregoing was somewhat confirmed by Mason (2010) who found that 80% of articles that adopted a qualitative research method had a minimum of fifteen interviews.

3.4.2 *Sampling technique*

Sampling techniques can be classified as probability based (representative of the population) or non-probability (judgement based) (Saunders et al., 2009). Probability sampling is allied to experiments and surveys, while non-probability sampling may be necessary for relatively small in-depth studies (Saunders et al., 2009). The kind questions for this dissertation did not require statistical inferences to be made which would necessitate probability sampling. Rather, this dissertation's research questions dictated comprehensive study focussing on a small sample. Accordingly, the researcher mainly used the snowball non-probability sampling technique (Saunders et al., 2009).

Snowball sampling entails leveraging initial respondents to direct/suggest other potential respondents (Bhattacherjee, 2012; Khadka, Batlajery, Saeidi, Jansen, & Hage, 2014; Valentine, 2016). Snowball sampling was necessary due to the challenges in ascertaining the desired members of the population (Saunders et al., 2009; Valentine, 2016). In part, members of the population included board members which Valentine (2016) regarded as "elite participants" and difficult to access. To acquire the initial set of interviewees, the researcher engaged potential respondents at leading financial services companies (e.g. banks, insurers, asset managers, FinTech's, & bond originators). The researcher had some consulting experience within the SA financial services landscape and had some context on the leading companies to approach. The researcher also leveraged his supervisor's and colleagues' networks who had contacts at other leading financial services companies. Saunders et al. (2009) advanced that using known contacts eased organisational access.

Sample bias is an issue introduced by snowball sampling (Saunders et al., 2009). Bhattacherjee (2012) asserted that where varied viewpoints were evident, a snowball sample was satisfactory. To obtain varied viewpoints, the researcher considered different types of financial services companies (e.g. banks, insurers, & asset managers). Valentine (2016) extended her sample to include executives and consultants in addition to board members to decrease sample bias. Similarly, the researcher obtained feedback from dissimilar types of participants, namely board

members, IT and non-IT executives to lower potential bias. The description of respondents is given in the next Chapter.

3.5 Data collection

The researcher designed the research instrument based on the research questions that were identified in the literature review. Refer to Appendix 1 for the research instrument. The researcher subjected the research instrument for critique (McIntosh & Morse, 2015) by his supervisor and a visiting professor at UCT's IS department and fine-tuned the instrument accordingly. The researcher also refined the research instrument during the data collection phase where some questions seemed unclear to interviewees.

The data collection phase is outlined in the following three stages: pre-interview, interview, and post-interview.

3.5.1 *Pre-interview*

The researcher contacted potential interviewees/their respective Personal Assistants with an interview request. In all cases, the researcher provided a cover letter and a concise email outlining the request (this included the research overview, audience, & interview duration). Potential interviewees then either accepted or declined to participate. Where respondents declined, the researcher noted their feedback and thanked them for their time. Where they accepted, a suitable date, time, and mode of the interview was agreed upon as per Myers and Newman's (2007) counsel. The researcher then forwarded the research abstract and interview questions to interviewees. The foregoing was done as per Myers and Newman's (2007) suggestion to ensure common understanding concerning the interview.

Farooq and de Villiers (2017) suggested that telephonic and other technologically mediated modes of interviews could be necessary where interviewees were not in the same location with time and money constraints. However, choice of interview mode should be made in the view of the purpose of a research and whether

interviewees and the researcher were comfortable with telephonic or technologically mediated interviews (Farooq & de Villiers, 2017). The researcher deemed the purpose of the research attainable while conducting interviews telephonically or mediated by technology. Additionally, the researcher and interviewees were comfortable with such interviews and the research questions were answerable. Seven interviews were telephonic, six face-to-face and the remaining two via video conferencing. Sturges and Hanrahan (2004) suggested that telephonic interviews were feasible for qualitative research.

3.5.2 *Interview*

The researcher then attended the interviews, paying particular attention to dress appropriately and use appropriate language in order to avoid "social dissonance" (Myers & Newman, 2007). The researcher structured the interview to include an introduction, interview body and conclusion. In the introduction, interviews began with niceties, the purpose of the research, how interview questions were grouped (to orient interviewees), and the researcher requesting to record the interviews (to capture actual verbatim and to enable the researcher to quote from interviews (Walsham, 2006)). Myers and Newman (2007), and Walsham (2006) advanced that the researcher ought to articulate the purpose of the interview at its commencement. Further, Bhattacherjee (2012) posited that consent should be sought where interviews are recorded (Bhattacherjee, 2012). The researcher also provided assurance of confidentiality to interviewees as suggested by Walsham (2006).

The researcher audio recorded interviews and jotted down key points during the main section of the interview, noting body language (Bhattacherjee, 2012) or verbal cues (e.g. tone, breaks, & tentativeness) in telephone interviews (Farooq & de Villiers, 2017). The researcher used the interview schedule to guide the discussion, probing where necessary and omitting questions which were deemed irrelevant in the context of the respective interview (Saunders et al., 2009).

Once the main section of the interview concluded, the researcher asked interviewees for additional issues they might have wanted to raise as suggested by Trier-Bieniek (2012). Subsequently, the researcher would then ask for other potential interviewees, consistent with the snowball sampling technique (Myers & Newman, 2007) and conclude the interview by thanking the participant for their time (Bhattacherjee, 2012).

The researcher noted some pertinent aspects that emanated from interviews that were not part of the initial questions (e.g. the CDO role) and the instrument was extended for later interviews.

3.5.3 *Post interview*

Post the interview, the researcher transcribed all the interviews, checking for aspects which were unclear. The researcher made use of selective member checks to ensure the correct narrative had been captured (Thomas, 2017). Member checks refer to the researcher providing an interviewee with a copy of their interview transcript to vet correctness (Thomas, 2017).

3.6 Data analysis

The researcher made use of NVivo 11 (referred to as NVivo hereafter) Qualitative Data Analysis Software (QDAS) to handle interview data and support analysis (Woods, Paulus, Atkins, & Macklin, 2016). An inductive thematic analysis approach was used to analyse the collected interview data. The researcher followed Braun and Clarke's (2006, p. 16) six phases of conducting thematic analysis:

Phase 1: Familiarisation with data entails the researcher ‘immersing’ themselves in the data to enforce a strong understanding. The researcher firstly familiarised themselves with the data by transcribing all interviews. Transcription is “a key phase of data analysis within interpretive qualitative methodology, and recognised as an interpretive act, where meanings are created, rather than simply a mechanical act of putting spoken sounds on paper” (Braun & Clarke, 2006, p. 87). Second, the

researcher “repeatedly read” through the transcripts eliciting patterns to immerse themselves in the data (Braun & Clarke, 2006).

Transcripts were verified against the recordings to ascertain correctness (Braun & Clarke, 2006). Where the researcher was still unclear e.g. inaudible verbatim, the researcher made use of selective member checks to obtain the correct narrative (Thomas, 2017).

All transcripts were imported into NVivo to enable subsequent analysis. Post importing the data, the researcher stratified responses according to company, company type and questions. Woods et al. (2016) noted that researchers used NVivo to ready data for analysis. In fact, data analysis and management were the main use cases of QDAS software (Woods et al., 2016).

Phase 2: Generating initial codes concerns constructing an interesting list of ideas about the contents of the data (Braun & Clarke, 2006). A code can be defined as “the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon” (Braun & Clarke, 2006, p. 88). The codes were determined from the data itself as opposed to the researcher coding specific features of the interview data (Braun & Clarke, 2006). The researcher used NVivo for coding – where codes are referred to as nodes (Woods et al., 2016). Patterns and inconsistencies within the dataset were noted for subsequent phases (Braun & Clarke, 2006). Using NVivo allowed the researcher to ensure consistent coding across data. Further, it facilitated “easier, more efficient and more accurate retrieval of coded data for analysis” (Woods et al., 2016, p. 606). Refer to Appendix 3 for examples of the initial NVivo nodes (note only a couple of screens are shown for brevity as there were 204 NVivo nodes).

Phase 3: Searching for themes entails ‘sorting’ and collating different codes and organising them into appropriate themes and subthemes (Braun & Clarke, 2006). Persisting with NVivo, the researcher grouped the NVivo nodes from the foregoing phase into more expansive themes (Woods et al., 2016). Refer to Appendix 4 for the initial themes and subthemes.

Phase 4: Reviewing themes. The researcher fine-tuned themes to ensure themes were both individually sound and if themes resonated with the complete dataset (Braun & Clarke, 2006). Refer to Appendix 5 for the refined themes and subthemes.

Phase 5: Defining and naming themes refers to "identifying the essence of" each theme and what it captures (Braun & Clarke, 2006, p. 92). The researcher conducted a detailed analysis of each theme in the context of the research questions. Subthemes were also identified at this stage in order to structure some particularly sizeable themes (Braun & Clarke, 2006). Refer to Figure 6 in the next Chapter for the thematic map.

Phase 6: Producing the report ensued after the researcher had completed theme development and entails the write-up of the thematic analysis. The researcher focused on producing a compelling account of the phenomenon, drawing upon vivid extracts from the data as evidence in support of arguments presented (Braun & Clarke, 2006). The results of the thematic analysis are detailed in the next Chapter.

3.7 Ethics

Ethics denote the "appropriateness of [the researcher's] behaviour in relation to the rights of those who become the subjects of the researcher's work or are affected by it" (Saunders et al., 2009, p. 183). Walsham (2006) identified three domains of practice when dealing with ethical issues in IS research, namely: confidentiality and anonymity, working with organisations, and reporting (Walsham, 2006). With regards to confidentiality and anonymity, researchers should assure confidentiality of participants e.g. not mentioning participants by name or role (Walsham, 2006). 'Working with the organisation' entails conducting the actual research and reporting is concerned with reporting accurate findings while being wary of reporting findings in a morally acceptable manner (Walsham, 2006). The researcher conducted the research in an ethical manner recognising the research impacts on subjects or other stakeholders. The researcher strictly preserved anonymity by aliasing individuals and companies via non-identifiable aliases in all artefacts of the research. Further,

the researcher took care to exclude examples that would potentially be easily identifiable.

Ethics approval was sought and approved by the UCT Ethics committee (see Appendix 6). Further, the researcher obtained permission from all interviewees before conducting interviews.

3.8 Assumptions and limitations

The researcher made the following **assumptions**:

1. Interviewees were knowledgeable on the subject of digitisation and that some engagements between CIOs and board members took place
2. Interviewees would be reticent to some extent so as not to speak too openly about their company and their colleagues.

The following were identified as **limitations** of the dissertation:

1. Inexperience of the researcher
2. The dissertation focused on only some financial services companies in SA
3. Although the researcher used Bhattacherjee's (2012) strategy of providing thick descriptions to allow readers to judge the dissertation's findings' transferability, findings may not necessarily be transferable
4. The researcher had a finite time period to complete the dissertation (Saunders et al., 2009)
5. The researcher had hoped to interview a director, a non-IT executive, and a CIO in different financial services companies to get different opinions. In some cases, the researcher managed to interview a CIO/CDO and a board member or a non-IT executive while in most cases the researcher was only able to interview one individual.

3.9 Validity and reliability

Anfara Jr, Brown and Mangione (2002), Bhattacherjee (2012) and Morse (2015) equated the criteria for attaining research rigour from quantitative research, namely internal validity, external validity (or generalisation), reliability and objectivity to qualitative criteria, namely credibility, transferability, dependability and conformability (respectively). **Credibility** concerns the soundness and correctness of a research's claims (Morse, 2015). Further, a research's semblance to the phenomenon of interest is a measure of its credibility (Clissett, 2008; Morse, 2015). **Transferability** concerns the applicability of a research's inferences in other settings (Bhattacherjee, 2012; Clissett, 2008). **Dependability** is defined "as the dependability, consistency, and/or repeatability of a project's data collection, interpretation, and/or analysis. Basically, it is the ability to obtain the same results if the study were to be repeated" (Morse, 2015, p. 1213). **Confirmability** is the level of cogence between research findings in light of the collected data for the purposes of the research (Clissett, 2008). Anfara Jr et al. (2002, p. 30) suggested strategies for evaluating a research's rigour for each of the foregoing criteria, refer to Table 1 for these and how they were applied for this dissertation.

Table 1: Quantitative and qualitative criteria for assessing research quality and rigour (Anfara Jr et al., 2002, p. 30).

Qualitative term *(quantitative term)*	Strategy	Comment pertaining to dissertation
Credibility *(internal validity)*	Prolonged engagement in field	Data was collected between April and August 2017. Average interview length was 50mins.
	Use of peer debriefing	The researcher considered perspectives from peers but assumed accountability for the research's outcome (Morse, 2015). The Research Proposal and Research Design were presented to a panel (i.e. UCT's IS department academics).
	Triangulation	Interviewee responses were triangulated against existing theory (Morse, 2015) and against secondary data (i.e. annual reports) (Bowen, 2009).
	Member checks	Selective member checking was employed to verify transcripts (Thomas, 2017).
	Time sampling	Not used, the study was cross-sectional (Saunders et al., 2009).
Transferability *(external validity)*	Provide thick description	The researcher included copious excerpts in the findings Chapter to provide thick description (Bhattacherjee, 2012; Mohlala, Goldman, & Goosen, 2012) which enable readers to judge the dissertation's transferability (Bhattacherjee, 2012).
	Purposive sampling	Not used, the researcher mainly used the snowball sampling technique (Saunders et al., 2009).
Dependability *(reliability)*	Create an audit trail	The researcher maintained records of certain facets e.g. supporting artefacts such as interview transcripts, analysis phases in NVivo (i.e. initial coding to developed themes), participant consent, and several versions of the dissertation write-up.
	Code-recode strategy	Through Braun and Clarke's (2006) thematic analysis phases, the researcher coded and recoded data multiple times e.g. during the phase of generating initial

		codes and reviewing themes where more coding was performed to ensure data had been sufficiently coded.
	Triangulation	Not used. Morse (2015) suggested that triangulation for ascertaining dependability and credibility were similar but however criticised it as a reliability strategy. Morse (2015) cited that either analysing data using different methods or researchers could plausibly lead to different results which nullify the rationale.
	Peer examination	The researcher often referred to other interviewees' comments during subsequent interviews. Almost always, responses were corroborated with each other's perspectives.
Confirmability ***(objectivity)***	Triangulation	Interviewee responses were triangulated against existing theory (Morse, 2015) and against secondary data (i.e. annual reports) (Bowen, 2009).
	Practice reflexivity	Berger (2015) suggested triangulation and prolonged engagement as some strategies for preserving reflexivity, which the researcher used as discussed. Berger (2015) suggested that reflexivity could be achieved when a researcher embodies an insider role. The researcher had working experience in the financial services industry which to an extent enabled the researcher to embody an 'insider' role in some cases by sharing experiences.

3.10 Consistency matrix

Refer to Appendix 2 for the consistency matrix which shows the research questions, corresponding research instrument questions, key sources for these questions and the method of analysis. A consistency matrix validates the cogence of a research method and aids the creation of a research instrument (IGI Global, 2018).

4 FINDINGS

An inductive thematic analysis approach was used to analyse the collected interview data (Braun & Clarke, 2006) as outlined in Section 3.6. From the thematic analysis of the interview transcripts, the researcher identified six major themes. The Chapter first introduces the themes and illustrates these via a thematic map, provides a description of the interviewees, and then details an account of the emergent themes, namely: digitisation, the board's role, the CIO/CDO role, non-IT executives'/business' role, digitisation engagement, and value. Each theme will be illustrated with relevant quotes from interviewees and linked to previous research. Refer to Figure 6 for the thematic map showing the six themes and their respective subthemes.

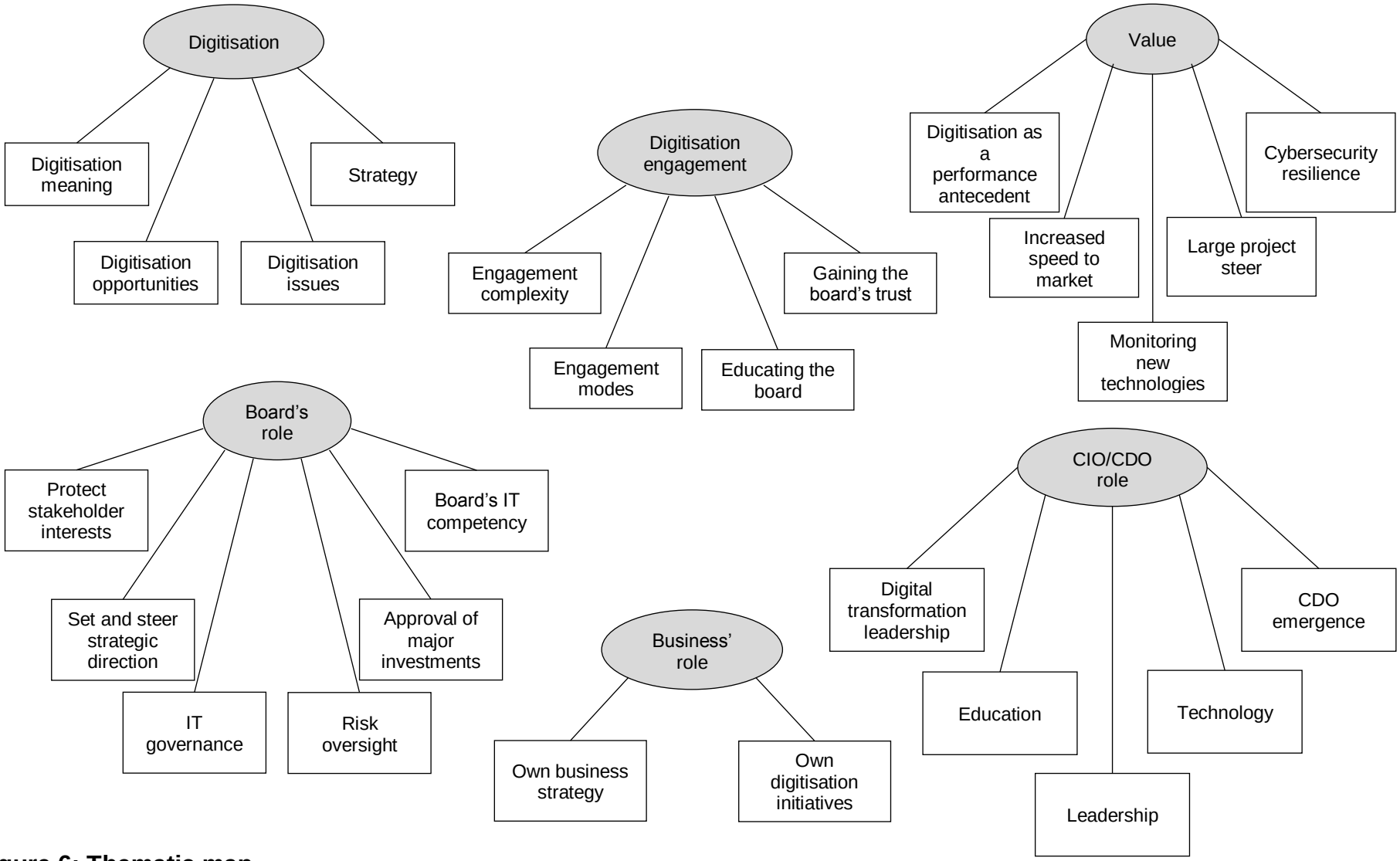

Figure 6: Thematic map.

4.1 Description of interviewees

The researcher interviewed fifteen executives from eleven financial services companies in South Africa. Interviewees consisted of business executives, technology executives, and board members. Refer to Table 2 for the profile of interviewees, interview duration and the number of NVivo nodes. To preserve anonymity, interviewees were allocated a pseudo name.

Table 2: Description of interviewees, interview duration, and number of NVivo nodes.

No.	Company pseudonym	Interviewee pseudonym	Role	Duration (in minutes)	Number of NVivo nodes
1	Bank_A	Ace	CIO	71	83
2	Bank_A	Adam	Non-Executive Director Chairman of two board committees	41	58
3	Bank_B	Brad	CIO	73	103
4	Bank_C	Carl	CIO	38	67
5	Bank_D	Dan	Head of Development (CIO report)	25	51
6	Bank_D	Digby	Non-Executive Director IT committee chair	68	93
7	Bank_E	Elle	CTO	61	61
8	Asset Manager J	Jan	Head of Strategic Projects (CIO report)	24	50
9	Asset_Manager_K	Kurt	CIO	46	73
10	Start-up	Sage	CEO Director at another insurer	48	74
11	Start-up	Scott	CIO	43	37
12	Insurer_X	Xeno	CDO	54	49
13	Insurer_Y	Yuri	Finance Director	48	91
14	Insurer_Y	Yavin	CDO	55	93
15	Insurer_Z	Zane	CIO	76	81

4.2 Theme 1: Digitisation

The first research question (RQ1), concerned how digitisation has affected SA financial services companies. This question was divided into four sub-questions which are addressed: digitisation's meaning, digitisation opportunities, digitisation issues, and strategy. The current section discusses the first sub-question (RQ1a)

which concerned how board members and CIOs of SA financial services companies defined digitisation. The main responses from interviewees was that business and digital were inextricable (mentioned by eight interviewees). Dan said “software is probably the most key part of our business because these days banks are more software companies almost than banks because everything is becoming digital. You won’t be able to have a bank if you are not digital.” Digby added, “nowadays, you can't live in that isolated world (i.e. separate business and digital)”. Interviewees concurred with Bankewitz et al. (2016) who advanced digitisation’s pervasive integration into business processes. Further, by Dan stating that “everything is becoming digital”, he agreed with Sing et al. (2016, p. 1) who argued that “technology enables virtually every activity in financial services”.

Xeno added a perspective of leveraging technology to provide a “unique offering”, he said, “there is no longer technology businesses and non-technology businesses, every business should (with emphasis) be considering themselves as a tech business that happens to have a unique side offering.” Xeno’s thoughts concurred with Ross et al. (2017) who suggested that companies should really focus on inimitably crafting unique offerings infused with digital technologies to realise a competitive advantage.

To answer RQ1a on digitisation’s meaning to SA financial services’ CIOs and board members, interviewees stated that digitisation was inextricably intertwined with their companies’ operations such that the business could not exist without being digital. Accordingly, the responses from interviewees answer the research question on digitisation’s meaning.

4.3 Theme 1 sub-theme: Digitisation Opportunities

When asked about the opportunities that digitisation provided (RQ1b), a common response from interviewees was that ‘context-based business value was key’ as opposed to the notion of being digital. Only two interviewees, Adam and Scott did not refer to context-based business value. Brad said, “clients are the last line of our organisation. Without the clients, we don't have a business regardless of how digital

we are or not." "It's all about is business making or creating services and solutions which make sense that aren't gimmicky", said Xeno. The foregoing sentiments from the interviewees support Kane, Palmer, Phillips, et al. (2015) and Schloss (2016), who suggested that when considering the future of a company in the context of technology, some pragmatism is required.

Interviewees identified a myriad of opportunities provided by digitisation, five key opportunities are now highlighted.

4.3.1 *Business enablement*

All interviewees said that digital technologies enabled customer engagement and business model reinvention which supported Cziesla's (2014) assertion that digital technologies enabled new modes of customer engagement and business model reinvention. Concerning customer engagement, Yuri said digital technologies enabled the insurer to service customers how they favoured. Zane and Scott said they used social media for client engagement e.g. responding to client service requests on Facebook and accepting client documents through WhatsApp respectively. The foregoing comments support Cziesla (2014) who stated that digital technology enabled customer engagement. Further, Zane and Scott's examples of using social media for customer service agreed with Bharadwaj et al. (2013).

Regarding business model reinvention, Brad and Yavin referred to using telemetry data availed by sensors (IoT devices) placed in people's cars to calculate insurance premiums based on an individual's risk profile. The foregoing is an example of how insurers can customise premiums based on actual customer behaviour. Specifically, it refers to the Pay-How-You-Drive (PHYD) category of Usage-Based-Insurance (UBI), which is a business model innovation enabled by IoT (Baecke & Bocca, 2017). UBI entails charging car insurance premiums by factoring driving patterns such as distance, time of driving, and others (Husnjak et al., 2015).

While referring to Uber, Yuri said "… actually it's the thought that's gone into the business processes and the customer experience that's made it what it is" which supports Kane, Palmer, Phillips, et al.'s (2015) argument that the key aspect is really how companies leverage digital technologies to reinvent their businesses.

4.3.2 *Cost reduction*

Ten interviewees (Ace, Brad, Carl, Elle, Jan, Kurt, Scott, Yavin, Yuri, & Zane) said that digitisation provided an opportunity to reduce costs. Cost reduction was not expressly discussed as a digitisation opportunity in the Literature review. Interviewees' responses support Luftman et al. (2015) and Mithas, Tafti, Bardhan, and Goh (2012) who asserted that companies could realise cost reductions conferred by technology. Carl said that servicing customers in-branch came at a huge cost to Bank_C and Brad suggested that embracing digital technologies such as mobile allowed banks to reduce the number of brick and mortar branches, thereby reducing costs. These comments support Mithas et al.'s (2012) assertion that self-service capabilities lowered costs.

Brad added that leveraging IoT devices can aid insurers to monitor liability in the form of potential claims. Brad said Bank_B's insurance business intended to use IoT devices to monitor the health status of geysers for its home insurance policyholders. This would enable ascertaining any related issues and proactively warn clients, thereby avoiding potential claims. Monitoring geysers' health could be classified as an enterprise application of IoT, specifically monitoring and control leading to lower costs (Lee & Lee, 2015).

4.3.3 *Business Process improvement*

Ten interviewees (Brad, Elle, Jan, Kurt, Sage, Scott, Xeno, Yavin, Yuri, & Zane) referred to business process improvement as an opportunity provided by digitisation. Brad's Bank_B was piloting blockchain technology to conduct end of day closing processes. Brad said the result, "where we used to have three full-time individuals that would take a week to do a close-out, we can get a machine to do

that in 30 seconds. So, the process improvement is phenomenal, it's drastic". Brad's example of using blockchain technology supported Dietz et al. (2015), and Fanning and Centers' (2016) argument that blockchain technology could enable financial services companies to process back-office transactions. Yavin said IoT devices could expedite claims since accidents could be automatically reported along with relevant details such as coordinates and photographs of the accident. Additionally, Zane referred to how Insurer_Z "combined data analytics with incoming leads to ensure that the auto dialling was more efficient." Interviewees' comments supported Markovitch and Willmott (2014) who stated that business process improvement is enabled by digitisation.

4.3.4 *Data-driven decision making*

Eleven interviewees (Ace, Brad, Dan, Digby, Jan, Kurt, Scott, Xeno, Yavin, Yuri, & Zane) contended that insights harnessed from analytics supported decision making. Xeno and Yavin said that data enabled the understanding of risk which aided with the pricing of risk. By drawing on insights from analytics, Jan advised that Asset_Manager_J elicited market trends which ultimately drove their mobile strategy. Interviewee comments supported Weill and Woerner (2015a) who stated that companies needed to make decisions based on data.

Interviewees also said that analytics could drive customer centricity. Brad said that analytics afforded "an ability to better understand clients and service them with the solutions that they're looking for at a point in time, where that moment of truth lies." Xeno felt that by leveraging analytics to tailor products, "people would have more drive to purchase our products or our services … as opposed to mass marketed products." Brad and Xeno's sentiment agree with Weill and Woerner (2015a) who argued that analytics in part afforded a means to better understand clients.

4.3.5 *Brand management*

Five interviewees (Ace, Digby, Elle, Xeno & Zane) mentioned that social media provided a means to monitor brand sentiment and address arising concerns. Ace

said Bank_A monitored social media as it could affect the bank's brand through client complaints. Ace's response supported Hoong (2013) who advanced that social media could tarnish a company's brand and reputation. Xeno added that Insurer_X used a social media platform to centrally manage complaints - essentially to address complaints in a manner that created a positive message while addressing the concern for other customers. Interviewees' comments concurred with Hanafizadeh et al. (2012) who stated that social media provided a means to monitor brand sentiment and address arising concerns. Services such as BrandWatch enable companies to monitor brand sentiment in real-time (Piccoli & Pigni, 2013).

So, to answer the research question on digitisation opportunities, an interesting aspect of interviewee responses was the application of some level of pragmatism by prioritising context-based business value over the notion of being digital. Though interviewees identified business enablement as consisting of client engagement and business model innovation, these had been identified in the literature review section. Similarly, strategic insight from the literature review was similar to data-driven decision making noted by the interviewees. Business agility identified from the literature review was mentioned by few interviewees in comparison to the other opportunities and hence it was excluded from the findings. Surprisingly, none of the interviewees explicitly identified competitive advantage as an opportunity that digitisation offered although Bilbao et al. (2013), and Weill and Woerner (2015a) argued otherwise. The foregoing could perhaps suggest the journey to maturation in digital technology use. Digby demonstrated this by stating "obviously analytics is a huge big area, I don't think anybody is using it to the degree yet that they fully understand".

Cost reduction, business process improvement, and brand management were identified as key opportunities by interviewees which added to the list of opportunities identified in the literature review. Further research could be useful to explore how digital transformation confers a competitive advantage in the context of SA financial services companies given its surprising omission from interviewee responses. Summarily, interviewee responses to RQ1b, support the opportunities

availed by digitisation identified in literature but also add to this list thereby addressing this research question.

4.4 Theme 1 sub-theme: Digitisation Issues

When asked about the issues that digitisation presented to SA financial services companies (RQ1c), a number of issues were identified but a few key ones are discussed in this section.

4.4.1 *The digitisation imperative*

Fourteen interviewees save Dan regarded digitisation as an imperative, and a means to sustain competitiveness. According to the interviewees, four aspects led to the digitisation imperative, namely pace, customer relevance, competitor pressure and the desire for digital leadership.

Concerning **pace**, Brad said, “the rate of change as a result of digitisation has forced us to relook at the pace and sequencing of which systems we decommission and which systems will need to be replaced.” Zane and Brad’s comments were echoed in literature, for instance, Bhimani and Willcocks (2014), and Kane, Palmer, Philips, et al. (2015) who stated that digital technologies change at a rapid pace. Garrison (2009) posited that for companies to survive, they need to swiftly respond to remain abreast of technological developments.

Maintaining **customer relevance** was the greatest cause for the digitisation imperative according to interviewees. Brad said non-banking services (e.g. Facebook, Uber or Airbnb) defined what customers expected of their banking relationship. Brad’s view was supported by Dietz et al. (2015) who stated that often customer expectations were being defined by non-banking institutions. Consequently, Bank_B was compelled to “create capabilities to service clients how they choose to be serviced… to maintain relevance” said Brad. The foregoing is not unique to Bank_B, Brad’s sentiments were supported by Weill and Woerner (2014)

who stated that customer demand for state of the art digital interactions forced companies to respond.

Regarding **competitor pressure**, Digby said, “if you are not digitising, you are going to be really falling behind the curve and you will start losing market share and you'll go out of business.” Digby’s comment reflects Lucas and Goh's (2009) admonition that companies need to acknowledge digitisation opportunities and threats otherwise face dire consequences; in Kodak’s case, this included among others a plummeting stock price, and loss of market share. Kodak eventually filed for bankruptcy as a result of failing to digitise (Hoong, 2013).Concerning companies wanting to be **digital leaders**, Ace said that “for us it’s important to be one of the front-runners because of our client base. We are a very niche player and I guess our brand. You can’t uphold the brand values and be behind the curve. Imagine if our digital offering was not as good as our competitors’ – what do you do? It’s not going to do us any favours.” Ace’s comment was supported by Haffke et al. (2016, p. 11) who identified that one of the factors that resulted in companies being pressured to digitally transform themselves was that “some firms feel intrinsically motivated to become a digital leader or defend their digital leadership position in their industry.”

4.4.2 *The security concern*

Security was a key issue for eleven interviewees (Ace, Adam, Brad, Carl, Dan, Digby, Jan, Kurt, Xeno, Yuri & Sage). Interviewee sentiments were reflected by Luftman et al. (2015) who found that security has been a key issue since 2003. While Yuri mentioned that Insurer_Y had not yet been a victim of a cyber-attack, he highlighted numerous “attempted penetration breaches” detected on a daily basis. Sage added, “the company needs to be wide awake as to where the front doors of their business are and whether these front doors are secure…” A company’s “doors” could include Digby - digital channels and APIs, Jan - cloud computing, and Xeno - IoT devices. Cloud computing as a potential opening was supported by Luftman et

al. (2015) while IoT devices as openings were supported by (Lee & Lee, 2015; Patel, Shangkuan, & Thomas, 2017).

Sage illustrated the potential security protection from cloud computing when he said that one of his computers was infected by the WannaCry virus but added: “it could be catastrophic if you are not built up correctly.” In this incident, the attack was contained due to the fact that there was no server onsite - infrastructure was set up in the cloud. The thinking behind Sage’s comment was supported by Ashford (2010) who acknowledged cloud computing’s security short-comings but added that it also offered security through automated patching and more resilient infrastructure.

4.4.3 *Talent (acquisition, retention, and development)*

Digitisation efforts require digital talent in order “to bring in leading technology practices” into the business (Andersson & Tuddenham, 2014, p. 3). However, Diedericks and Rothmann (2014), Ertürk and Vurgun (2015), Mohlala, Goldman, and Goosen (2012) cited an IT skills shortage which Bughin, Holley and Mellbye (2015) argued was a major impediment for digitisation. Ten interviewees (Ace, Adam, Brad, Carl, Elle, Kurt, Scott, Yavin, Yuri & Zane) referred to talent as one of digitisation’s issues. Brad questioned whether Bank_B was adequately skilled. Carl cited a national shortage of specialist IT skills in SA, noting the need to sometimes acquire European trainers to train local resources. Interviewee comments demonstrate concern on talent which reflects Ertürk and Vurgun's (2015) observation that talent was a key IT management concern. Carl’s comments demonstrate a lack of IT skills in SA which was highlighted by Diedericks and Rothmann (2014). More broadly, talent acquisition, development, and retention are part of executive management’s priorities (Ertürk & Vurgun, 2015; Pande & Schrey, 2016).

Adam said the IT skills challenge was exacerbated by high staff turnover of digitally skilled staff. The researcher noted IT executive turnover from interviewee responses e.g. Yuri: “but we hired someone (a CDO) actually last week” to replace an outgoing one, and Zane: “I know the guys in financial services keep moving

around". Adam's assertion that IT skills shortage was due to high staff turnover was cited by Diedericks and Rothmann (2014), and Mohlala et al. (2012).

A pertinent challenge concerning talent according to Adam was "internal audit's digital capability ... do we have the right people to actually audit digital. That's an important point that." Adam's comments were mirrored by Henderson, Davis, and Lapke (2013) who suggested that few companies audited both business and IT concurrently possibly as a result of business auditors being deficient of IT skills. "The board should ensure that internal audit has the talent and skill sets required to independently challenge IT" (Sing et al., 2016, p. 11).

4.4.4 *Threat of new entrants*

Eight interviewees (Ace, Brad, Carl, Elle, Kurt, Sage, Yavin & Yuri) noted the threat of new entrants which was alluded to by Cziesla (2014). Yuri from Insurer_Y asserted "we worry more about banks and mobile operators than we do about the other insurance companies." However, the imminent threat of new entrants was treated with some cynicism by some respondents, e.g. Kurt advanced that while companies such as Google and Amazon had great reputations, the context of trust was different when it came to entrusting them with one's life savings.

4.4.5 *Legacy technology*

"A legacy system is any business critical software system that significantly resists modification and their failure can have a serious impact on the business" (Khadka et al., 2014, p. 1). Legacy systems impede digital transformation (Fitzgerald et al., 2013; Kates, 2013) as they are intricate to modernise and integrate with newer technologies (Fitzgerald et al., 2013). Four interviewees (Brad, Carl, Yuri & Yavin) cited legacy technology as an encumbrance to digitisation efforts which was agreed to by Fitzgerald et al. (2013) and Kates (2013). Yavin summarised the challenge well: "we have some legacy systems here some of which are 25, 30 years old and the ability to put a fancy customer process on the front-end is really hard (emphasis)... your cost and time to develop is probably four times what it will be for

someone that doesn't have a legacy system." Yuri added that the real conversation ends up being trade-off conclusion points around how to digitise while factoring in legacy technology. Yavin's comments confirm the "digital advantage" of digital companies referred to by Andersson and Tuddenham (2014, p. 2) and significant spend on maintaining legacy systems (Crotty & Horrocks, 2017). Yuri's comment concerning trade-offs on digitising the company and the legacy technology challenge was also highlighted by Brinckmann and Govender (2015). In the digital age, CIOs need to redress the legacy encumbrance and ensure that their departments revitalise how IT could confer business value (Corso, Giovannetti, Guglielmi, & Vaia, 2018).

So, to answer the research question on digitisation issues, the digitisation imperative, legacy technology, talent emerged from interviewee responses only, while the threat of digitisation and security was identified in both literature and interviewee responses.

4.5 Theme 1 sub-theme: Strategy

Regarding strategy, nine interviewees offered their views on strategy, regarding alignment vs the single business strategy (RQ1d). Of the nine interviewees, four adopted the alignment view while five adopted Bharadwaj et al.'s (2013) DBS or single business strategy view.

The **alignment view** was adopted by Carl, Jan, Xeno, and Zane. Jan eloquently said "any well-run organisation should have two strategies: a business strategy and an IT/IS strategy. But the IT/IS strategy should be supporting the business strategy. The business sets the direction and IT/IS needs to support it in getting there. And obviously, the success thereof is based on how aligned those strategies are." Five of the interviewees (Ace, Brad, Sage, Yavin & Yuri) indicated the use of a **single business strategy**. Brad stated, "so no longer do we have that technology strategy that sits on the side but rather it is infused into the group strategy given the pervasiveness of technology and all matters associated with technology." Ace was more forceful stating "let me just say that [pauses] if you ask me do we have an IT

strategy, and people talk a lot of nonsense about aligning an IT strategy to a business strategy. That's rubbish, ok. There is a business strategy. A large part of that business strategy is IT based. We don't separate the two." Similarly, though Insurer_X adopted the alignment view, Xeno felt that defining a digital strategy for the business was a "misnomer - I very strongly believe that we shouldn't be defining a digital strategy in our business, we should not be. What we should be doing is defining business strategies which are relevant in a digital age." Interviewee sentiments of combining the business and IT strategy was agreed to by several authors e.g. Bharadwaj et al. (2013), Brinckmann and Govender (2015), and Kahre et al. (2017). Xeno's comments suggest that in the digital era, separating business and digital strategies (which resonates with the alignment view - (Bharadwaj et al., 2013)) was no longer appropriate which was agreed to in literature. Precisely, Kahre et al. (2017, p. 4708) said the alignment view ceased to provide an adequate "strategic posture" in the digital era.

So, to answer the research question on the interviewees' strategy views pertaining to the alignment and the single business strategy views, five of the nine interviewees who commented indicated the use of the latter versus the former. The division of interviewee responses between the single business strategy view and the alignment view suggests a possible transitory phase where possibly, more businesses will adopt the former as opposed to the alignment view. The foregoing is suggested due to the alignment view being viewed as an inapt strategic posture in the digital age (Kahre et al., 2017).

4.6 Theme 2: The board's role

Concerning the research question on the board's perceived role (RQ2), interviewee responses consisted of six key aspects: protecting stakeholder interests, setting strategic direction, approval of major investments, risk oversight, IT governance and the board's IT competency.

4.6.1 *Protect stakeholder interests*

Seven interviewees (Ace, Adam, Brad, Carl, Jan, Yavin & Yuri) identified that a key role of the board was to protect stakeholder interests with the significant ones being shareholders and customers. Brad said, “the board is interested in ensuring that all of our key stakeholders’ interests are looked after. But clearly the paramount of all of those is the shareholder…” Concerning protecting customer interests, Brad said, “if we don’t maintain our relevance with our clients, we don’t have a business. So, the board’s interest in digitisation is simplistically to ensure that the bank remains relevant and that the bank is delivering solutions and products and services to our client when they need them.” Brad’s comments were echoed by Weill and Woerner (2015b) who asserted that the board had a duty to safeguard interests of a company’s stakeholders.

4.6.2 *Set and steer strategic direction*

Eleven interviewees (Ace, Adam, Brad, Dan, Digby, Elle, Kurt, Sage, Yavin, Yuri & Zane) said the board was involved in setting the business strategy. First, Elle said the board outlines a vision to inform strategy. Second, she added that executive management “carve a business strategy interpreting that vision” which the board critiques and approves “within the ambit of the vision that they have set”. Dan emphasised the board’s approval citing that the “executive cannot execute without board agreement”. Third, Dan’s comment shows that board approval precedes execution by executive management. Fourth, Elle said the board steers the strategy (i.e. reviewing if the strategy was still appropriate). She also advised that the strategy process was iterative between the board and executive management. Interviewees’ assertions of the board setting the strategic direction, management carving a suitable strategy subject to board approval, execution by management and strategy review mirrored the strategy making process espoused by Institute of Directors South Africa (2016).

Yavin said over the past couple of years Insurer_Y’s board requested executives to include digital in the business strategy. By requesting executives to include the

digital in the strategy, Insurer_Y's board demonstrated digital leadership. Yavin's comment of the board leading the combining of business and digital strategies was supported by Bonnet's (2014) and Bankewitz et al. (2016) who contended that boards needed to champion the unification of business and IT strategies. Company strategies should reflect the unification of business and IT strategy (Bharadwaj et al., 2013; El Sawy et al., 2016).

4.6.3 *Approval of major investments*

Nine interviewees said that the board was responsible for approving major investments. Ace, Carl, and Dan said when investments exceeded a certain amount, board approval was required. Brad and Elle advised that when sanctioning investments, boards considered aspects such as risk, regulation, financials (e.g. NPV & IOR), improvement of customer service and retention. Summarily, Insurer_Y's board was "very much balanced in terms of thinking strategically versus looking for returns fairly quickly", said Yuri. Interviewees' comments were agreed to by Turel and Bart (2014) who asserted that the board needed to authorise critical decisions and provide funding (Sarrazin & Willmott, 2016).

4.6.4 *Risk oversight*

Risk oversight was identified by twelve interviewees (except Dan, Scott & Xeno) as a role of the board. Elle said on an on-going basis, "the role of a board is to make sure there is no unmanaged additional risk that is posed on an organisation arising from an investment, digitisation initiatives or anything else…" Examples of risk identified by interviewees included: reputational risk, the risk of technology adoption versus being passive, cyber risk, execution risk for major initiatives and operational risk. Most risks identified by the interviewees were also identified by Sing et al. (2016, p. 5) e.g. "strategic risk of IT, cybersecurity and incident response risk, IT resiliency and continuity risk, IT program execution risk and Technology operations risk." Interviewees' supported Valentine (2016) that the board needed to provide risk oversight. Further, interviewee sentiments support that the board should

provide oversight for technology and information risks (Institute of Directors South Africa, 2016).

4.6.5 *IT governance*

Interviewee responses to RQ2a, which dealt with the board's role pertaining to IT governance included the main roles being oversight for IT performance, digitisation response, security and IT strategy.

IT performance oversight as an aspect of board technology governance which was supported by Benaroch and Chernobai (2017). Interviewees asserted that board IT performance oversight entailed: raising questions about how performance could be improved, ensuring acceptable returns on IT investment, IT maturity and IT delivery oversight.

Oversight of a company's response to digitisation included the board keeping appraised of market trends and the company's response, appropriateness of response and catalysing response where necessary (e.g. a board member at Bank_A catalysed blockchain plans). The board should consider how digitisation impacts a company's competitive advantage (Bankewitz et al., 2016) and challenge executives on digitisation opportunities and threats while offering the necessary support for digital transformation efforts thereof (Bughin et al., 2015).

On security, Ace recounted a board member challenging him on Bank_A's level of security by asking a "difficult question". The board member asked, "well how do you know that the bank is secure… how do you compare to the rest of the market?" Ace's comment supported Jewer and Mckay's (2012) statement that boards have a duty to critique a company's security measures. Board's must oversee that information architecture supports the CIA triad and actively monitor a company's security and respond to instances of security issues (Institute of Directors South Africa, 2016).

Seven interviewees asserted that the board provided oversight for the technical strategy (how IT operates) and the IT strategy (how IT supported the business

strategy). The foregoing supported Institute of Directors South Africa (2016, p. 63) who stated that the board should oversee “a technology architecture that enables the achievement of strategic and operational objectives.”

4.6.6 *Board’s IT competency*

Eight interviewees (Ace, Adam, Dan, Kurt, Sage, Xeno, Yuri & Zane) felt that boards lacked IT competency. Although some interviewees expressed that their boards were aware of new technologies, they still felt boards lacked understanding. Interviewees’ comments supported Yayla and Hu (2014) who stated that though boards generally appreciated the significance of IT, they were not digitally astute. Ultimately, “in agency theory, monitoring effectiveness hinges on the monitor knowing as much as the monitored” (Benaroch & Chernobai, 2017, p. 738). Accordingly, boards ought to have IT competency to provide effective IT governance (Jewer & Mckay, 2012; Valentine & Stewart, 2015; Yayla & Hu, 2014). An IT acumen enables boards to aptly query executive management pertaining to IT governance issues (Benaroch & Chernobai, 2017; Yayla & Hu, 2014). Adding “technologists” to the board could bolster IT skills and in turn assist boards to provide better IT governance (Kark et al., 2017; Yayla & Hu, 2014). Other suggestions to improve the board’s IT skills and governance thereof were training boards on IT governance (Jewer & Mckay, 2012) and board committees to oversee IT (Coertze & Von Solms, 2014a). Companies “… need to get to the point where the majority of the board is tech-savvy” Kark et al.'s (2017, p. 7).

Worth noting is the fact that among the interviewees, Zane was the only CIO who was also a board member to which he admitted was rare. Sage said he was also a director of another local insurance company but while conducting a skill based board revamp he said, “IT hadn’t even featured”. Further, Sage asserted that “it’s more about having board directors who have the experience of the topic than it is about bringing another executive onto the board.” Sage’s comment suggests that not only were digital skills were overlooked during board recruitment but there could also be a bias of recruiting non-executive directors. Kark et al. (2017) highlighted

that very few (3%) of public companies recruited digital experts when new board members were appointed which agrees with Sage's comment and explains the lack of CIO board members. During board recruitment, Nash (2012) said board members preferred potential directors to possess other skills such as financial, global and industry experience as compared to technology.

Answering research question two, pertaining to the board's role, interviewees' responses could be categorised into six aspects which were discussed, namely: protecting stakeholder interests, setting strategic direction, approval of major investments, risk oversight, IT governance and the board's IT competency. Pertaining to RQ2a, on the board's IT governance role, four key aspects emerged: IT performance oversight, digitisation response oversight, security oversight, and IT and technical strategy oversight. Interviewee responses to RQ2a expanded understanding of the board's role on IT governance. In sum, there was significant overlap concerning the board's role as described in literature and from interviewee responses. However, the board's lack of IT competency featured more strongly from the interviewee responses as compared to the literature discussed.

4.7 Theme 3: CIO/CDO role

When asked about the perceived role of the CIO (RQ3), interviewee responses referred to the CIO as a digital transformation leader, educator, leader and technologist. However, interviewees also mentioned the emergence of the CDO role. This section first outlines the CIO's role and then the CDO's role.

4.7.1 *Digital transformation leadership*

All interviewees except for Xeno, Yavin, Yuri mentioned that the CIO was a digital transformation leader. Note, the exceptions were because Xeno and Yavin were CDOs themselves and drove digital transformation. Yuri was a Finance director at Yavin's company. Capitani (2018) purported that CIOs needed to reinvent their role to include digital transformation leadership. Digby and Zane said that the CIOs

needed to provide digital thought leadership to non-IT executives and boards. Zane said thought leadership entailed monitoring developments and "relating developments to opportunities … to experiment or to embrace digital technologies more quickly." The foregoing was agreed to by Weill and Woerner (2015b) who advanced that CIOs needed to be attentive to the immediate business climate and its likely future prospects to recognise key junctures to advise boards to take action. Interviewees monitored new technologies through experimentation, annual trips to technology havens and staff development. The foregoing means were reflected in literature e.g. experimentation and trips to technology hubs such as the Silicon Valley were noted by Sarrazin and Willmott (2016), while staff development was supported by Mohlala et al. (2012).

4.7.2 *Education*

Nine interviewees said the CIO was an educator while Yavin said the same of the CDO. Elle said education should be linked to business value – she said, "people mustn't evangelise concepts, they must evangelise how concepts can solve business problems". Interviewees stated that education to non-IT executives and the board included digitisation opportunities, digitisation issues, technical strategy and development methodologies. This was generally agreed to by Valentine (2014) who stated that the CIO could educate non-IT business executives and the board on digitisation. Elle's comment concerning "evangelising how concepts can solve business problems" was agreed to by Gerth and Peppard (2016). Though Gerth and Peppard (2016) advanced that CIO's needed to illustrate tangible value from IT investments in order to build the executive's IT acumen, the same logic is applicable when "evangelising concepts" to the board.

4.7.3 *Leadership*

Business leadership was raised by eight interviewees. Brad and Kurt said the CIO was part of the Executive Committee (ExCo) while Zane said that he was a board member to which he admitted was rare for a CIO. Only Zane and the CIO at

Insurer_X were board members. Brad said the CIO was a custodian of the company's strategy and "one of the top 10 decision makers for the group." Yuri said that the IT folk needed to contribute to the business strategy to ensure its robustness and applicability regarding digitisation. Interviewee sentiments of the CIO contributing to strategy were agreed to by Hodgson and Lane (2010) who advocated that the CIO was a business leader and needed to assist non-IT executives in creating a strategy.

Possibly, room for growth does however exist in the CIOs' leadership role given an apprehension of politics elicited from interviewee responses e.g. Sage said "with all respect, your average geeky nerd IT guy isn't the guy who will play political games", Carl said "… you not constantly fighting with politics …which is great …" Sage and Carl's comments were reflected by Krotov (2015, p. 280) who argued that, due to their backgrounds, "[CIOs] often lack these political and influencing skills. This … deprives CIOs from opportunities to deliver value." As stated in the literature review section, in order to attain strategic objectives, the CIO needs to possess the ability to influence peers and lead strategic IT initiatives (Krotov, 2015).

4.7.4 *Technology*

All interviewees said the CIO was a technologist which entailed: IT strategist, digital expert and IT delivery. As an **IT strategist**, CIOs were responsible for creating a technical strategy (how IT operates) and formulating an IT strategy to support the business strategy. The latter being more applicable where the alignment view was ascribed to. Interviewee sentiments of the CIO creating a technical strategy and an IT strategy to support the business strategy were supported by Ding, Li, and George (2014).

Ace, Sage, Zane, Elle, Brad, and Carl referred to the CIO as a **digital expert**. Sage said, "the CIO who is a leader should then have technical expertise in all the domains that they need one of which would be a digital expert." Interviewee comments were supported by Correia and Joia (2014), Krotov (2015), and Liu

(2016) who stated that CIOs need to have technical competence to deliver meaningful value.

IT delivery was raised as a CIO role by all of the interviewees. Brad succinctly said that CIOs typically planned for delivery (i.e. budgeting & resourcing), then designed, developed and implemented IT solutions for business enablement. Brad's comments agreed with Correia and Joia (2014) who stated that the CIO's role entailed delivery of technological solutions.

To balance responding to digitisation and balancing operations, Brad, Sage, Yavin, and Yuri used a bi-modal approach to delivery. Brad said Bank_B had two modes: Business as Usual (BAU) and Digital. Brad added that BAU entailed 'keeping the lights on' and included activities such as ATM maintenance and processing transactions etc while the digital mode was a capability to leverage innovations and new technologies "for the betterment of the bank and getting to market quite quickly and effectively". Interviewee comments of operating in different modes was supported by Horlach and Drews (2016, p. 1421) who referred to "bi-modal IT" to represent "traditional IT" and "digital IT".

4.7.5 *CDO role emergence*

A CDO role in addition to the CIO emerged from eight interviewees (Adam, Brad, Digby, Kurt, Yuri, Xeno, Yavin, & Zane). Yavin said, "the CIO is not driving digital within our organisation. So, the CIO is responsible for technology and technology must enable digital but the digital strategy is being set by the CDO (in conjunction with business). And a lot of organisations now have a CDO (tapping on desk) … to drive digital transformation." Some CDO appointments were recent (relative to the time the research was conducted) e.g. Brad and Zane indicated CDOs were appointed in 2016. Interviewee sentiments concerning the emergence of the CDO was confirmed by Haffke et al. (2016), Horlach and Drews (2016), and Singh and Hess (2017) who said a number of companies had introduced the CDO to drive the digital transformation agenda over and above the CIO role. Singh and Hess (2017) offered that the rationale for the CDO role was two-fold: the digitisation imperative

induced by the market and intricacies of company-wide digitisation. Xeno felt that the CDO role was temporary until Insurer_X was digitally mature, which supported Singh and Hess's (2017) sentiment on the matter although the latter did not conclude on the matter given the newness of the role.

Interviewees said CIOs and CDOs needed to work together. Yavin said IT was split into two roles: CDO (digitisation) and CIO (technical strategy and implementation). Accordingly, Yavin often engaged the CIO to build solutions. CIOs and CDOs working together was supported by Haffke et al. (2016) who asserted that CIOs and CDOs needed to work closely together in close partnership when they coexist.

CDO criticism

Carl was sceptical of the CDO role arguing that digitising, “doesn't need an artificial structure, you don’t need a CDO.” Carl’s view was agreed to by Gerth and Peppard (2016) who criticised the CDO role in part saying that while digital technologies were new, the foundation of technology remained constant such that a new CDO role supposedly different from that of the CIO was misplaced. Further, Gerth and Peppard's (2016, p. 62) said the CDO role included “what a CIO should be doing” which builds into a view that sometimes, incumbent CIOs could be ineffective at aspects of their role allotted to CDOs. Similarly, one of the respondents to Haffke et al.'s (2016, p. 12) study was of the opinion that “the introduction of a CDO role often constitutes [the] failure of the CIO or failure of the top management to empower the CIO.” A CIO with a business acumen, notable at digital evangelism and coordination “can—in combination with the other factors—reduce the need for a separate CDO role to the point that it is deemed unnecessary” (Haffke et al., 2016, p. 12). Considering the arguments presented by Gerth and Peppard (2016), and Haffke et al. (2016), while factoring in that the CDO was a transitory role to the point of digital maturity (Singh & Hess, 2017), would a better solution not be for CIOs to drive digital while top management empower the CIO?

CDO potential challenges

From the interviewee responses, an overlap between the CIO and the CDO roles existed, namely: digital transformation leadership, delivery, and education. Haffke et al. (2016) similarly advanced that there was potential for duplication of the CIO and CDO roles when it came to evangelising and coordinating digitisation. When a company has both a CIO and a CDO, there was a need for a clear delineation of their job specifications (Haffke et al., 2016).

In their charge of company-wide digital transformation, CDOs often report to CEOs (Haffke et al., 2016; Singh & Hess, 2017) as they lack sufficient influence otherwise (Singh & Hess, 2017). Interestingly, interviewee responses told a different story: four of the reported CDOs reported to the CIO while the other three each reported to their respective CEO, COO, and Marketing Head. Xeno and Yavin, the two interviewed CDOs were not part of executive committees although their respective managers were. Yavin engaged with executive management when formulating the digital strategy while Xeno sat on an executive marketing group. Singh and Hess (2017) demonstrated that when a CDO didn't report to the CEO and was excluded from executive management meetings, they had insufficient authority to drive company-wide digitisation. Evidently, Xeno lacked sufficient authority while Yavin's authority can be in question given his reporting line. Haffke et al. (2016, p. 13) cited an example where a CDO reporting to a CIO failed to gain any traction pertaining to evangelising digital transformation and coordinating such initiatives. "This IT-sponsored CDO was not positioned right to break open the borders between business and IT … Other business executives did not perceive him as one of them and behaved non-collaborative [with the CDO]" (Haffke et al., 2016, p. 13). Therefore, executive management has a duty to appropriate the necessary authority to their CDOs to prime them for success (Singh & Hess, 2017).

So, to answer the research question on the CIO's role, the CIO as a technologist, leader, educator, and digital transformation leader was identified in both the literature review and the interviewee responses. The business knowledge role identified in the literature review was implied in the Analysis section's leadership

role. Further, interviewee responses indicated the emergence of the CDO to drive digital transformation in addition to the CIO role; this hadn't been discussed in the Literature Review section. However, for the CDOs interviewed, there could be some questions on the CDO's authority given their reporting lines.

4.8 Theme 4: Non-IT executives' role

There were no particular research questions identified that pertained to non-IT executives' (or 'business'') role from the literature review, however, this theme emerged from interviewee responses. There were two sub-themes that concerned the business role: owning the business strategy and digitisation initiatives.

4.8.1 *Own business strategy*

Business is responsible for setting the business strategy as was identified by nine interviewees. Sage said, "the CEO, the board and the key strategy executives have got to own where the business is going". Carl justified this by saying that business was responsible for revenue targets. In some instances, CIOs as part of executive management also contributed to the business strategy especially in cases where companies used a single business strategy e.g. Ace, Yuri, Sage, Brad, Xeno, and Yavin. As discussed in the section on the Board's role, executive management develop the company strategy and execute it in line with the board's set strategic direction (IT Governance Institute, 2003).

4.8.2 *Own digitisation initiatives*

Eleven interviewees argued that the business should own digitisation initiatives. Sage strongly asserted that the business, specifically the CEO needed to own all digitisation implementations without abdicating his responsibilities to the CIO – however, the CIO needed to be his partner. Sage offered three justifications for this, the first being that, "I don't think a CIO can implement the level of change that potentially could be demanded by say the board and the role of the CEO becomes

important." Second, in some cases, the CIO maybe conflicted e.g. outsourcing. Third and most importantly, Sage asserted that the business needed to be sensitive to changes in the market that could threaten or disrupt a company's business model and respond appropriately. From the interview data, business ownership was evidenced by CIO/CDOs reporting to either the CEO or another business executive, and business prioritising and monitoring project delivery. Interviewee sentiments were supported by Haffke et al. (2016) who also found that business needed to retain responsibility for digital transformation. Importantly, Peppard (2010) argued that executive management assuming accountability for IT was a key antecedent of IT value optimisation.

4.9 Theme 5: Digitisation engagement

When interviewees were asked about digitisation engagement (RQ4), the following sub-themes emerged: engagement complexity, established engagement modes, educating the board and gaining the board's trust. Important to note, engagements will factor both the CIO and the CDO participating in engagement. However, given that most CDOs reported to the CIO, CDO-board engagement was generally lower in comparison to CIOs.

4.9.1 *Engagement complexity*

Five interviewees implied engagements with the board were a complex matter. Zane highlighted "there is a lot of moving parts to the strategy of how to interact with the board, build the trust, get the buy-in and then create that partnership where we all really talking about taking things forward and from a place of agreement." Xeno illustrated complexity by saying "how do you convince a board entirely focused on product and actuarial sciences that we need to change the entire way that business is driven?" It's important to note that perhaps Xeno's comment was influenced by his relative positioning in the company – he lacked sufficient authority (as discussed in Section 4.7.5). These interviewee sentiments support the inference drawn from the literature review that CIO-board engagements are complex based

on Czinki and Hentschel's (2016) assertion that human beings compound complexity in an already complex world.

Applying the logic from the Cynefin framework which the “Framework” section of the literature review posited was suitable for complex matters such as CIO-board engagements, Kurt and Zane said that they experimented with different technologies and made presentations to their boards. Zane gave an example where Insurer_Z leveraged Artificial Intelligence (AI) and automated dialling to improve efficiency post successful experimentations and subsequent presentations to the board. The foregoing resonates with the thinking in the Complex context of Snowden and Boone's (2007) Cynefin framework of probing, sensing and responding. Probing was represented by the experiments, sensing was recognising the worth of engaging the board on the results of the experimentation while responding was the implementation. The foregoing shows how the logic espoused in the Complex context of the Cynefin framework might be applied in digitisation engagement.

4.9.2 *Engagement modes*

All the respondents except for Scott mentioned a mode of engaging with the board. Three modes are discussed herein: board meetings, board committees and ad-hoc engagements.

a. *Board meetings*

Twelve interviewees referred to board meetings as a mode of board engagement which was supported by Turel and Bart (2014). Most board meetings were conducted quarterly while others were conducted between three and eight times per year. Board meeting frequency as espoused by the interviewees was supported by Valentine (2016) who purported that most boards convened quarterly. Zane and Kurt’s boards spent 15% and 5% (respectively) of board meeting time discussing digitisation matters. In most cases, board time spent discussing digitisation was impossible to ascertain as interviewees did not always partake in board meetings

and in other cases, digitisation was discussed in the context of business outcomes. Kurt and Zane's indicated proportion of time spent discussing digitisation matters was to an extent similar to what Yayla and Hu (2014) found: less than 5%.

Ace, Adam, Brad, Dan, and Digby also indicated that board strategy sessions were also scheduled in addition to board meetings to educate the board on digital and other topics. Board education sessions occurred either once, bi-annually or on a quarterly basis. Brad mentioned that at Bank_B, board education sessions occurred every quarter and with an educational paper provided to supplement the session. Brad added, "what started off an educational paper has definitely become a part of how we operate and how the boardroom remains appraised of all of these new things happening around us." Interviewee sentiments supported Yayla and Hu's (2014) comments onboard education to better the board's IT knowledge.

Six interviewees said board strategy sessions were a means of engagement with the board which supported Jewer and Mckay's (2012) assertion on the matter. Most interviewees' board strategy sessions occurred once a year and lasted between one and four days. Only Zane indicated bi-annual strategy sessions. Sage and Yavin advised they spent 10% and 25% respectively discussing digitisation matters during board strategy sessions. Digby said the CIO and the CDO would each spend a "big chunk of the time" (reasonable to assume about 25%) at the strategy session discussing digitisation. Adam informed that digitisation wasn't a specific agenda item, though it was discussed in the context of (broader business outcomes) therefore it was difficult to ascertain the time spent discussing the subject.

b. *Board committees*

Seven interviewees highlighted board committees (e.g. IT, Risk & Customer committees) as a means of engagement. Brad stated, "… by virtue of board members sitting on the IT committee … they'll be appraised of all technology matters across the group". Interviewees' use of board committees supports Bankewitz et al. (2016), though the latter added that committees extended board competencies. Bankewitz et al. (2016) advanced that in most instances, digitisation

fell under the ambit of the Risk or Audit committees while less than 25% of the time, a specific IT committee. Contrastingly, seven interviewees' companies had an IT committee to address digitisation. The foregoing could be explained by the fact, the researcher exclusively focussed on financial services companies which Cziesla (2014) argued to be IT-intensive. Nash (2012) posited that it was more probable that IT committees existed in financial services companies as compared with other companies in non-IT intensive industries. Engagements via board committees were either bi-annually or quarterly. Regarding time spent discussing IT, IT committees were digitisation focussed and as such, engagements were focused on the subject.

c. *Ad-hoc engagements*

Six interviewees referred to ad-hoc engagements. Ace started an initiative to onboard new board members upon election, Digby met with Bank_D's CIO monthly and other IT executives twice a year for 'check-ins'. Digby was the IT Committee chair which could explain his frequent engagement with IT executives. CDO Yavin recounted an instance where board members visited his team's area to "touch, feel and see" what his team was doing. "Showing people the customer processes and the things that we are doing so they can talk about them with knowledge and experience and it's not just a PowerPoint slide is a very important element of what it is I think" added Yavin. Valentine (2016) noted that digitisation issues (e.g. reputational damage through social media or cyber-attacks) can be precipitous rendering fortnightly, monthly or quarterly board meetings pedestrian. To enable responsiveness, Bankewitz, Aberg, and Teuchert (2016) advocated that the board and executive management interact in both formal and ad hoc engagements. In this instance, interviewees' responses supported literature concerning engaging with the board on an ad hoc basis although based on Valentine's (2016) assertion, meeting frequency could have been pedestrian. Yavin's comment supported Chandhoke et al. (2015) who asserted that demonstrations of technology could invoke a greater impact as compared to a presentation.

4.9.3 *Educating the board*

Eleven interviewees alluded to the CIO/CDO educating the board on various digitisation aspects, namely: digital technologies, digitisation opportunities and issues, and education on way of work.

a. *Digital technologies*

Brad and Yuri said digitisation education sessions were ad hoc while the other interviewees said these were more formal e.g. Ace and Zane (bi-annually), Digby (quarterly for half a day). Interviewees also advised that education sessions leaned more towards applicability of digital technologies in their specific business contexts e.g. Yuri said sessions tended "not to be … dedicated digitisation sessions but more the particular angle of the digitisation debate and discussion being as part of a broader conversation around what we are trying to do with it." Similarly, Brad said the board requested to be educated on "the new innovations … So philosophically, what are all of these things, and then tell us what the group is doing, and tell us what the plan is going forward. And that pertains to blockchain, machine learning, Artificial Intelligence, Cloud Computing, Robotics, Internet of Things - it's is really the full spectrum of innovations."

Zane asserted that "it's actually quite useful to rather have that level of education come from an external party (e.g. external auditors) and the fact that we have worked with them and understood what they are going to present before they present actually helps as well." When probed on why this was so, Zane said that their external auditing company had a team dedicated to tracking new technologies and therefore could cover a greater scope as compared to his team with limited capacity. Summarily, interviewee responses support Valentine (2014) who found that the CIO/CDO had a role to play concerning raising the board's knowledge and awareness concerning digitisation. Yayla and Hu (2014, p. 427) found that it was necessary for CIOs to educate the board and on IT and its "strategic role in the firm and industry" to increase appreciation of IT matters.

b. *Education on digitisation opportunities and issues*

Education on digitisation's opportunities and issues was the main subject of education discussions (mentioned by eight interviewees). Pertaining to opportunities, Zane advised that he would track developments in the technology landscape and "relate those developments to opportunities, whether it's opportunities to experiment or opportunities to embrace it more quickly and to communicate those to the board."

Regarding discussed digitisation issues, these included: cybersecurity (Ace, Digby & Yuri), disruption (Yavin), and digitisation threats (Kurt & Yavin). Yuri added that Insurer_Y once invited a world-renowned cybersecurity expert to give the board an overview of the subject along with ongoing trends. Yavin recounted a strategy session on disruption stating: "we had a strategy session on disruption where we looked at a number of trends at a macro level, a global level that pose a threat to our business." Interestingly, Xeno felt that disruption would be a "good lesson" for his board, he said "if any board is seeing that they're being impacted from outside the business by like a non-incumbent or a start-up… for instance, once our board starts seeing that as a real risk, that they might get a fright and a willingness to change." Xeno's comment demonstrates the difficulty of getting the board to appreciate the threat of digitisation to the extent that disruption could serve as education mechanism. Interviewee responses supported Valentine (2014) that some of the topics that CIOs/CDOs could educate the board on included digitisation's opportunities and issues.

c. *Education on ways of work*

Ace, Kurt, Dan, and Digby advised that CIOs educated the board on ways of work, essentially agile development to enable delivery. Digby and Dan reflected on a board education session that Dan facilitated on agile development. Digby asserted that agile development to enable rapid software development went "hand in hand … in some ways with digitisation". The foregoing supports Pande and Schrey (2016) that it was imperative that boards comprehend agile development.

4.9.4 *Gaining the board's trust*

Eleven interviewees advanced **quality delivery** as a means to gain the board's trust on digitisation. Digby eloquently stated that "any executive" gains the board's trust by "delivering consistently top value and that's the way you build up the trust - to continuously deliver as promised …. And that's quite critical for the CIO to establish that and get that trust and the only way to do it is actually by experience you know." "… If you had the respect of the board by delivering those things upfront then you have a better chance of convincing them that but there is a bigger opportunity at play here", said Xeno. Interviewee sentiments support Correia and Joia (2014) who asserted that delivery of stable IT infrastructure strengthens the CIO's credibility in an organisation.

Trust is partly conferred by the persistent interaction between the CIO and non-IT individuals (Arnitz, Hütter, & Riedl, 2017). Digby's comment of building trust through "experience" potentially poses an interesting dilemma in light of the observed CIO churn within the current data set (noted in three interviews). For instance, how is the trust relationship affected by the CIO building some rapport then leaving only for the next one in line to restart the process?

Another perhaps more salient issue raised by four interviewees was that of '**empathetic communication'** to gain the board trust. Yuri, for instance, pointed out that "just be honest with what you don't know in terms of building the board's trust. To most boards, digitisation is a fairly cutting-edge area, for most people it probably is but to most boards your average age is over 60. So being prepared to just put your hand up and say I don't actually know about that particular topic or that particular area. I think boards get a lot of comfort from people being very straightforward about that."

Elle referred to social engagements outside the boardroom **to build relationships and rapport** with the board, she said "Take them out for beers! … trust is based on relationships you know. No amount of spreadsheets and presentations and 'bling' 'bling' is going to build that relationship. You need to spend time with those people ... it's the basic people stuff you know it's nothing you find in a PowerPoint

presentation." Although Arnitz et al. (2017) were referring to CIOs and other executives when they asserted that social engagements between the two parties could foster trust, their sentiments could be transposed as a means to build trust between the CIO and the board. The foregoing logic was supported by Elle's sentiments.

Zane also mentioned a critical point of what engagements should attain. He said one needs to build "the alignment to say when you present a decision to them (the board), it's the same decision that they would have made. That builds trust as well and that builds an alignment." Zane added that consistent and deliberate efforts in the relationship with the board are important, he said, "over a period of building trust and alignment, eventually a partnership forms" - which for him culminated in him being appointed as a board member. Summarily, interviewees supported Chandhoke et al. (2015) who said CIOs needed to be trusted by the board and build rapport.

So, to answer the research question on how CIOs engaged boards on digitisation, one of the emerging sub-themes from interviewees (engagement complexity) matched the engagement topics outlined in the literature review. Although mentioned in the literature review, engagement modes, education, and the CIO gaining the board's trust were accentuated in interviewee responses.

4.10 Theme 6: Value

When asked about how CIO-board engagements have influenced company performance (RQ5), interviewee responses leaned more towards 'value' as opposed to quantifiable performance (i.e. financial performance as denoted by Turel and Bart (2014)). Interviewees' sentiments on getting value from digitisation engagements was supported by Bankewitz et al. (2016) who stated that board participation in digitisation engagement creates value for companies. "Boards involved in these decisions can provide significant value by challenging the main assumptions, checking that investment choices and digital technology priorities will maximise returns and minimise risks, and seizing technological opportunities before

they fully materialise" (Bankewitz, Aberg, & Teuchert, 2016, p. 62). This section briefly outlines the difficulty of assessing performance improvement as a result of digitisation initiatives and discusses the value that emanated from digitisation engagement.

4.10.1 *Proving digitisation as a performance antecedent*

When Digby was asked about performance, he said "this is quite a difficult one (strained tone) because ... (pauses) you know the problem with all of this is that there is no direct correlation." Digby referred to the bank's vehicle finance business through the bank's mobile application channel. He said isolating the main factors influencing performance was intricate given the number of factors involved such as competitive rates, favourable terms, and usability relative to other apps. Digby's comment supported Fitzgerald et al. (2013) who acknowledged companies' difficulty in ascertaining potential returns of adopting digital technologies.

4.10.2 *Increased speed to market*

Brad advised that Bank_B's board instigated a restructuring to enhance the bank's speed to market. Bank_B split IT into two modes, namely: Business as Usual (BAU), Digital. Brad said that "the impetus to the construct of the Digital mode emanated from group board instigation" as the board realised that the bank had been "so busy keeping the lights on and transforming legacy stuff that the world was happening around the bank." Brad said the Digital mode "is a mandate from the group to operate differently: to partner, to alliance, to Joint Venture (JV), to acquire if necessary different capabilities that will position us favourably to compete going forward." Brad added, "it's all because the board was what sort of insistent with this digitisation", that Bank_B was able to deliver products to the market faster, products they might not have considered otherwise.

Zane said that Insurer_Z's board "firmly drove" experimentation with new technologies. Zane commented that while "some experiments don't end up being

anything, a number of them have actually translated into early adoption of something that's now becoming a trend... I think a lot of these things we wouldn't have done if it had not been for the board pushing." When probed, Zane offered an example of the early adoption of Artificial Intelligence where the insurer was now getting value. Zane added that the swiftness with which the insurer was able to exploit the opportunity enabled the insurer to introduce a new product type in a much shorter timeline leading to revenue collection sooner. "That in an insurance company is a head start that lasts forever because the earlier you start collecting premiums on a new product, no one else will ever catch that up", said Zane.

Brad and Zane's comments demonstrate how their respective boards influenced an increased speed to market. Woerner et al. (2013, p. 38) stated that "unfortunately too often time costs money, particularly when it comes to issues of time to market." Zane's example demonstrates how getting to market quicker than competitor insurers affords a lead on premium collection. Zane's example also reflects the board's "sensing" capabilities where "sensing refers to recognition of opportunities before they occur and identifying competitive threats" (Bankewitz et al., 2016, p. 60).

4.10.3 *Monitoring new technologies*

Ace advised that Bank_A had an IT conversant board member that facilitated IT staff's annual interaction with new start-ups around the world to inform on IT investments that could add value to the bank. This example illustrates the board's servicing function of IT governance (Benaroch & Chernobai, 2017) whereby the board member provided counsel and facilitated Bank_A's interaction with third parties. The facilitation, in turn, resulted in cutting-edge investments which added value to the bank in the form of enhanced customer value proposition. Similarly, companies could leverage digital technology to enhance their customer value proposition by adding unique product features to their products (Kates, 2013). As discussed in the literature review, to achieve a competitive edge in the digital era,

companies should inimitably fuse digital technologies into a unique value proposition (Ross, Sebastian, & Beath, 2017).

4.10.4 *Board steering large project delivery*

Yuri provided an example where digitisation engagement was valuable, referring to Insurer_Y's providing effective oversight for a large project delivery. Insurer_Y's board challenged executives on the feasibility and risk pertaining to ambitious plans for a large initiative the insurer was busy with. Through this process, the board adjusted plans to ensure feasibility. Yuri also referred to the relevant experience board members had which enabled them to ask the "what could go wrong questions." That challenge "saves you in effect from yourself because if you reset early, you might have an opportunity cost of a few million Rand where if you reset late in the process you can have hard costs of multiple hundreds of millions very easily which don't get you anywhere" said Yuri. The foregoing example illustrates the board providing delivery oversight on a large project (Institute of Directors South Africa, 2016) and demonstrates how the board's challenges resulted in timely remedial action which minimised potential costs.

4.10.5 *Cybersecurity resilience*

Ace provided an interesting account of how engagement with Bank_A's board provided value. A board member challenged Ace's team on the bank's secureness whilst he reported that an independent third party said the bank was "good" after conducting penetration tests. The board member asked, "well how do you know that you are good security-wise… how do you compare to the rest of the market?" To adequately respond, Ace said there was only one way which entailed independent scrutiny and an independent attack (Targeted Attack Simulation (TAS)) by a CREST certified cybersecurity company. Ace openly said, "initially I was irritated (as it was costly) but essentially it was a wake-up call and we actually do this every single year now." Ace said the challenge from the board and response thereof "was a very good thing and it has made us much stronger (with emphasis) from a

cybersecurity point of view. I don't think they would get a breach right with us." The foregoing example illustrates the implementation of robust cybersecurity practices that emanated from CIO-board digitisation engagement, which was valuable. Ultimately, the response strengthened the Bank against cyber-attacks which Yayla and Hu (2014) stated could have adverse financial impacts to a company.

The research question on performance was answered in the context of business value rather than performance. The foregoing could imply that getting perceived value was easier as compared to "proving" performance that stemmed from digitisation initiatives as a result of digitisation engagements. As outlined, value included: increased speed to market, value from monitoring new technology, large project steer, and cybersecurity resilience – which really relate to responding digitisation opportunities and issues.

4.11 Summary of findings

Research question 1 concerned how digitisation affected SA financial services companies. Four sub-themes emerged: digitisation's meaning, digitisation opportunities and issues, and strategy. Concerning digitisation's meaning, interviewees referred to business and digital's inextricability. Interviewees asserted that the main opportunities offered by digitisation were: business enablement, cost reduction, business process improvement, data driven decision making, and brand management. Contrastingly, the main digitisation issues raised by interviewees were: the digitisation imperative, the security concern, talent, the threat of new entrants, and legacy technology. Regarding strategy, a slight majority of interviewees adopted the single business strategy view while the rest favoured the alignment view.

Research question 2 concerned the board's role on digitisation in the context of SA financial services companies. A key issue that emerged from the data was that some board members were appreciative of digitisation but lacked the IT competency. Authors such as Valentine and Stewart (2015), Yayla and Hu (2014) advanced that board digital competency was imperative for effective IT governance.

The key board roles identified by interviewees were: protecting stakeholder interests, setting business' strategic direction, approval of major investments, risk oversight, and IT governance.

Research question 3 pertained to the CIO's role in SA financial services companies. The data indicated four main roles: digital transformation leadership, education, leadership, and technology. As a digital transformation leader, the CIO was in charge of driving a company's digital transformation agenda although in some companies, a CDO also existed for this purpose. As an educator, the CIO was needed to educate the board and non-IT executives on digitisation while as a business leader, the CIO was recognised as a business leader contributing to business strategy although room for improvement does exist. As a technologist, the CIO was responsible for delivering IT solutions for business enablement, and was a technical strategist and digital expert. An emerging aspect from eight interviews was that of the new CDO role, an executive tasked with driving digitisation. The CDO was considered as a digital strategist and had other overlapping roles with the CIO such as digital transformation leadership and education. Interviewees, however, highlighted that CIOs and CDOs needed to work together. Considering that CDO authority was questionable from the interview data, Singh and Hess (2017) cautioned that management needed to afford CDOs the necessary authority to enable them to adequately drive digitisation.

Another emerging aspect of interviewee responses was that of the business' role. The business had two key roles: owning the business strategy and owning digitisation initiatives. In particular, as owners of the business strategy, executive management was responsible for setting the business strategy. As owners of digitisation initiatives, business executives prioritised and monitored IT delivery.

Research question 4 on digitisation engagements yielded a number of facets from interviewees. First, interviewees identified that digitisation engagements with the board were a complex matter, as such the research demonstrated the applicability of the logic espoused in Snowden and Boone's (2007) Complex context of the Cynefin framework. Second, interviewees indicated different engagement modes,

namely: board meetings, board committees, and ad hoc engagements. Third, engagements entailed board education on digital technologies, digitisation's opportunities and issues, and on way of work. Fourth, the data indicated that the board's trust of a CIO was an important ingredient to meaningful digitisation engagements.

Research question 5 concerned how CIO-board engagements influenced performance. Interviewee responses leaned towards value as opposed to explicit financial performance. The foregoing can also be explained by the difficulty of isolating the effect of digitisation initiatives on performance. Value conferred from digitisation engagement included: increased speed to market, monitoring new technologies, board steer on large project delivery, and cybersecurity resilience.

Post analysis, it was necessary to update the conceptual framework from the Literature Review Chapter to include emergent themes from the Findings (i.e. CDO & non-IT executives' role) and to consider the data contours i.e. value as opposed to performance. Refer to Figure 7 for the updated conceptual framework. Essentially the conceptual framework shows that CIOs/CDOs, the board, and business are involved in digitisation engagement which influences value.

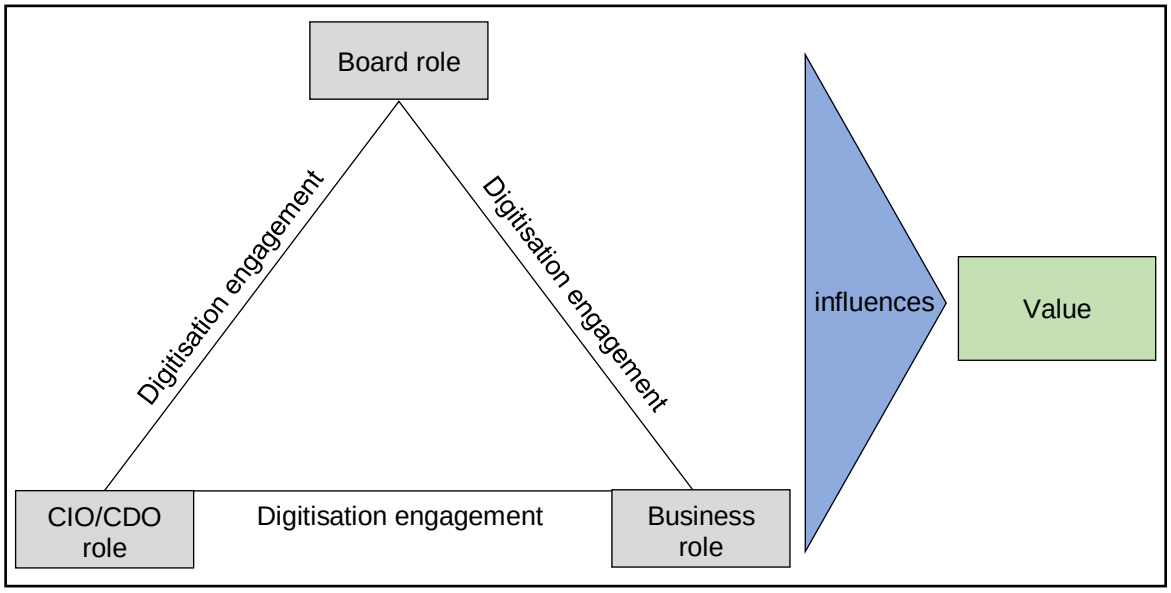

Figure 7: Updated conceptual framework.

5 CONCLUSION

This Chapter concludes the dissertation and is structured as follows: first, a summary of Chapters 1 – 4 is provided, then follows a discussion which details the lessons that can be taken from this dissertation from theoretical and practical perspectives.

5.1 Summary

The main research problem concerned that the board as custodians of companies have to understand and lead digital transformation (Weill & Woerner, 2015b) and CIOs can assist them with this (Weill & Woerner, 2015b) but not enough was known about how the two parties engage on technology matters (Coertze & Von Solms, 2014a). Accordingly, this dissertation sought to explore how CIOs engaged boards on digitisation in SA financial services companies.

In Chapter 2, the literature review detailed five key topics pertaining to the research's purpose. These were digitisation, the board's role, the CIO's role, digitisation engagement, and performance. The Chapter proposed that the CIOs and boards could use the logic espoused in the Complex context of Snowden and Boone's (2007) Cynefin framework when considering how to tackle digitisation engagement. Further, a conceptual model that encapsulated the research was provided. The Literature Review Chapter led to the following main research questions:

1. How has digitisation affected SA financial services companies (including digitisation's definition, opportunities, issues, & strategy)?

2. What are the perceived roles of boards on digitisation in SA financial services companies (including IT governance)?

3. What are the perceived roles of CIOs on digitisation in SA financial services companies?

4. How do CIOs of SA financial services engage boards on digitisation?

5. How have CIO-board engagements influenced company performance?

The Research Methodology, Chapter 3, outlined how the research was carried out. The researcher adopted an interpretivist philosophical stance and selected a qualitative research approach. Data was gathered using semi-structured interviews given the flexibility they afforded while being reasonably focused, i.e. theme oriented with flexibility for the researcher to adapt the questions depending on the context (Saunders et al., 2009). The researcher interviewed fifteen individuals in total including board members, and IT and non-IT executives. The researcher used QDAS (NVivo 11) to manage interview data and support analysis (Woods, Paulus, Atkins, & Macklin, 2016). Interview data was analysed using the guidance of Braun and Clarke's (2006) prescripts for conducting thematic analysis.

Chapter 4 discussed the results from the thematic analysis. Six key themes emerged: digitisation, the board's role, business' role, the CIO's role, digitisation engagement, and value. The theme on the business' role on digitisation, was not included in the initial literature review but was unearthed from the analysis of the transcripts. Further, results indicated the emergence of the CDO role as an executive to drive digital transformation in addition to the CIO – this was a subtheme of the CIO's role. Although interviewees were asked how digitisation engagements influenced performance, analysis of the transcripts suggested that digitisation engagements influenced value. From the interviews and subsequent analysis, the researcher obtained rich answers to all the research questions concerning this dissertation.

5.2 Discussion

Concerning methodological reflection, a qualitative approach enabled the researcher to obtain an in-depth understanding (Saunders et al., 2009) which was appropriate for this dissertation's objective. A qualitative approach uses data collection methods such as interviews and documents (Wohlin & Aurum, 2015). As

such, semi-structured interviews used to collect data afforded the researcher guidance while allowing for probing interesting aspects emanating from interviews (Saunders et al., 2009). Contrastingly, a quantitative approach leverages statistical analyses (Wohlin & Aurum, 2015) which would not have permitted an in-depth understanding (Saunders et al., 2009). Further, fixed questions used in quantitative approaches (Saunders et al., 2009) would not have allowed for probing interesting aspects as was the case in semi-structured interviews. Extending this thinking, interesting aspects of the data would not have been explored and emerging themes would not have been elicited using a quantitative approach.

On substantive reflection, most topics discussed in the literature review also emerged as themes from the thematic analysis e.g. digitisation, the board's role, the CIO's role and digitisation engagement. However, the business's role and the CDO role were a theme and a subtheme (respectively) that had not been discussed in the literature review but emerged from the thematic analysis. Concerning the performance topic identified in the literature review, the results from the thematic analysis rather referred to business value. However, there were some aspects where differences were noted between the literature and the findings from the thematic analysis. Bilbao et al. (2013), and Weill and Woerner (2015a) asserted that digitisation afforded companies a competitive advantage, however, none of the interviewees explicitly mentioned competitive advantage as an opportunity digitisation offered. Haffke et al. (2016), and Singh and Hess (2017) reported that CDOs typically reported to the CEO while the findings from the research suggested that CDO's often reported to CIOs.

Chapter 3.8 listed limitations of this dissertation. Adding on to these, this dissertation was carried out in financial services companies partly because they would tend to be more IT intensive than companies in certain other industries. Some of the findings of this dissertation cannot necessarily be transferable to other industries or financial services companies in other countries, while some findings could be applicable.

Regarding scientific reflection, this dissertation has contributed to the body of knowledge by demonstrating how the logic espoused in the Complex context of Snowden and Boone's (2007) Cynefin framework might be leveraged to tackle digitisation engagements between the board and CIOs. Considering the novelty of the nature of digital technologies (i.e. digital technologies reinventing business models), the topic is still relatively new (Cziesla, 2014). Therefore, this dissertation adds to the body of knowledge by exploring digitisation, and digitisation engagements specifically in financial services companies in SA.

5.3 Recommendations

5.3.1 *Practice*

As alluded from the thematic analysis, when considering digitisation opportunities, interviewees asserted that ‘context-based business value was key’ as opposed to the notion of being digital. In practice, some pragmatism is required when considering a company’s future in the context of technology (Kane, Palmer, Phillips, & Kiron, 2015; Schloss, 2016).

From the thematic analysis, CDO authority to drive digital transformation was questionable given reporting lines and in some cases CDO exclusion from engagements at Executive Committees. When CDOs do not report to the CEO and are excluded from executive management, they are ineffective at driving company-wide digitisation (Singh & Hess, 2017). Although the relative success of the CDOs interviewed wasn’t explored, executive management has a duty to appropriate the necessary authority to their CDOs to prime them for success (Singh & Hess, 2017).

As surfaced from the thematic analysis, where a CIO and a CDO coexist, the two needed to work together. The foregoing was supported by Haffke et al. (2016) who asserted that CIOs and CDOs needed to work closely together in companies where both exist.

From the findings, one of the sub-themes belonging to the theme of the board's role concerned the board's lack of IT competency. Board IT competency can be improved by recruiting IT-skilled board members (Kark et al., 2017), and training (Jewer & Mckay, 2012).

CIOs and boards could adopt the *"probe-sense-respond"* strategy in Snowden and Boone's (2007) 'Complex' context of the Cynefin framework when engaging the board on digitisation. Where digitisation topics or means to engage the board are unclear, CIOs could experiment with both to establish relevant topics and modes to engage the board.

A theme that emerged from the thematic analysis concerned the non-IT executives' role on digitisation which entailed owning the business strategy and digitisation initiatives. Executive management assuming accountability for IT was a key antecedent of IT value optimisation (Peppard, 2010).

5.3.2 *Theory*

This dissertation advanced theory by illustrating how the thinking in Snowden and Boone's (2007) 'Complex' context of the Cynefin framework might be applied when tackling the complex subject of CIO-board engagements on digitisation. Further, the dissertation added to theory by providing the perspectives of SA financial services companies on digitisation and digitisation engagement.

For future research, other researchers could explore how digital transformation confers a competitive advantage in the context of SA financial services companies given none of the interviewees felt it was an opportunity digitisation provided.

Concerning strategy, interview data suggested that more companies will adopt the single business strategy view as opposed to the alignment view. Future research could explore the state strategy in SA financial services companies and if indeed more companies are adopting the single business strategy view.

Further, Gerth and Peppard (2016) stated that the CIO leads digitisation but from the interviewee responses this wasn't always the case. Further research could investigate who drives the digitisation agenda and their touchpoints with the CIO. Future research could also investigate the success of CDOs in an SA financial services context given that their authority to drive digitisation was questionable.

Interview data surfaced the board's lack of IT competency. Given that boards ought to have IT competency to provide effective IT governance (Jewer & Mckay, 2012; Valentine & Stewart, 2015; Yayla & Hu, 2014), future research could explore how board IT competency fares over time especially in light of the board providing effective IT governance.

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APPENDICES

Appendix 1: Research Instrument

Introduction

- Researcher provided a concise overview of research
    - Definition of digitisation
    - Research topics: digitisation, the role of the board, the role of the CIO, performance and digitisation engagement.

Digitisation

RQ1**:** How has digitisation affected SA financial services companies?

RQ1a: How do board members and CIOs in SA financial services companies define digitisation?

RQ1b: What opportunities has digitisation provided to SA financial services companies?

RQ1c: What issues has digitisation presented to SA financial services companies?

Research instrument questions

- What does digitisation/digital transformation mean in the context of your organisation?
- What are the key opportunities digitisation (digital technologies – SMACIT) has provided? Please provide examples.
- What are the key issues that have resulted from digitisation (digital technologies – SMACIT)? Please provide examples.

Strategy

RQ1d: What are the views of strategy (i.e. the alignment view vs the single business strategy view) in SA financial services companies?

Research instrument questions

- Are the business and IT strategy independent?
- How is strategy formulated?

Board's role

RQ2: What are the perceived roles of boards on digitisation in SA financial services companies?

RQ2a: What is the board's role in IT governance?

Research instrument questions

- In what ways does the board support digitisation? Please provide examples.
- In what ways does the board direct value creation?
- How does the board influence strategy?
- How does the board monitor performance?
- How does the board govern risk & compliance?
- How do boards see themselves as catalysts for digital transformation? Or: How do CIOs see the board as a catalyst for digital transformation? Please provide examples?

CIO's role

RQ3: What are the perceived roles of CIOs on digitisation in SA financial services companies?

Research instrument questions

- Describe the role of the CIO on digitisation in the company's context?
- What are examples of ways that CIOs have used to convince board members to support digitisation?
- In what ways does the CIO educate the board on digitisation?

Additional question on CDO role (asked in some later interviews):

- Do you have a CDO? What are your interactions with them?

Engagement

RQ4: How do CIOs of SA financial services engage boards on digitisation?

Research instrument questions

- What are examples of initiatives that the CIO has taken to engage the board on digitisation?
- When and how should the board and the CIO interact?
- What topics should (or could) the board and the CIO discuss?
- How do these topics come about?
- How does the CIO establish rapport and gain the board's trust on digitisation?

Performance (all) [5 mins]

RQ5: How have CIO-board engagements influenced company performance?

Research instrument questions

- What are examples of where CIO-board engagements have influenced company performance?

Conclusion [5 mins]

- Any other insights on the subject?
    - What else could I be looking into that would be valuable from a practitioner perspective?
- Any other individuals that I could interview on the subject?

Appendix 2: Consistency matrix

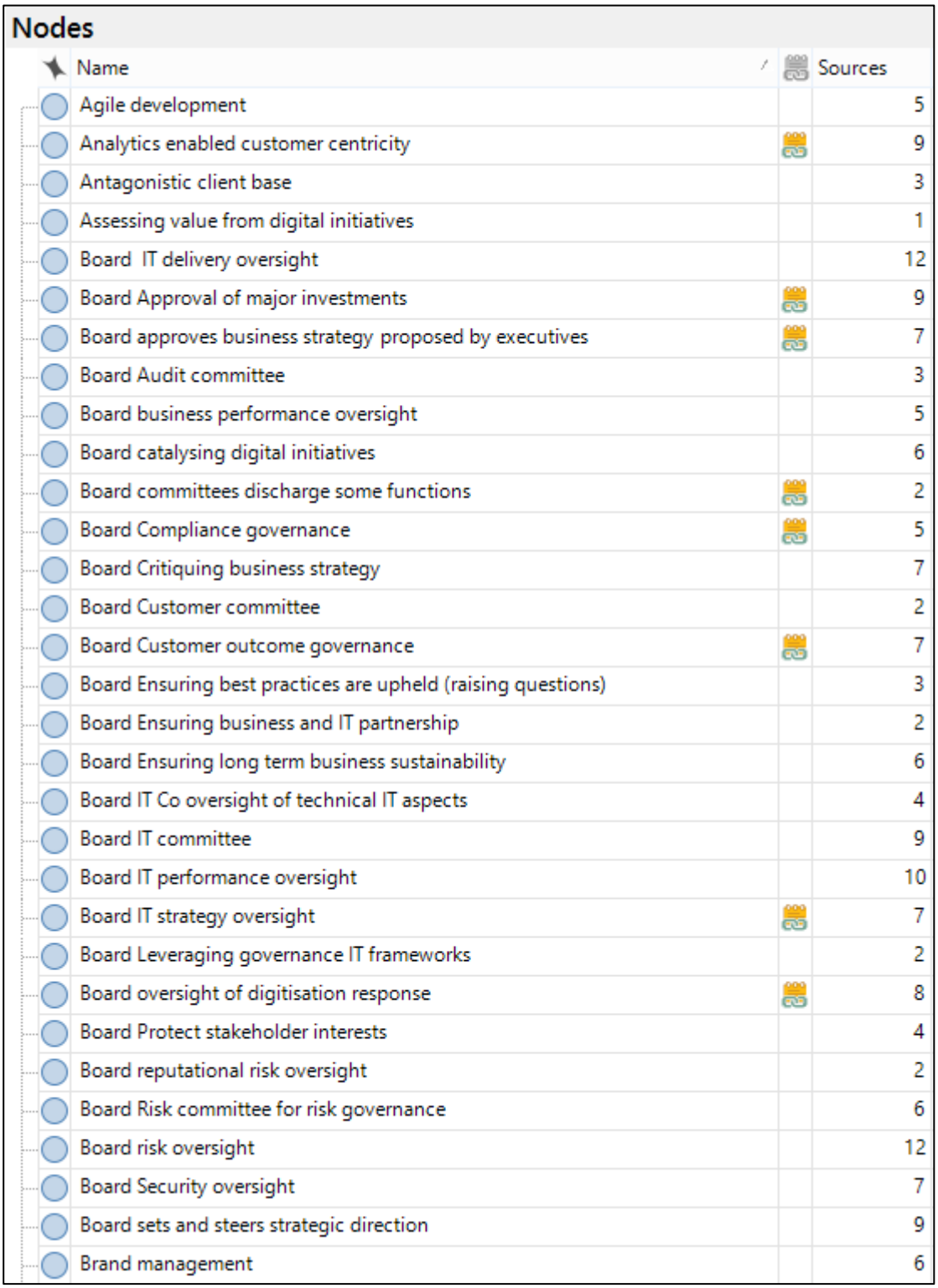
Research problem: Boards as custodians of companies have to understand and lead digital transformation (Weill & Woerner, 2015b). CIOs can assist with the education (Valentine, 2014) and advising the board to respond (Weill & Woerner, 2015b) but how do CIOs engage boards on digitisation (Coertze & Von Solms, 2014a; MIT Center for Information Systems Research, 2015)?				
Literature Review	**Research questions**	**Source of data**	**Type of data**	**Analysis**
• Aron and Waller (2014) • Weill and Woerner (2013) • Katz et al. (2013)	RQ1: How has digitisation affected SA financial services companies? RQ1a: How do board members and CIOs in SA financial services companies define digitisation?	• What does digitisation/digital transformation mean in the context of your organisation?	Verbatim feedback	Thematic analysis
• Weill and Woerner (2015a) • Bhimani and Willcocks (2014) • Brynjolfsson and McAfee (2012)	RQ1b: What opportunities has digitisation provided to SA financial services companies?	• What are the key opportunities digitisation (digital technologies – SMACIT) has provided? Please provide examples.	Verbatim feedback	Thematic analysis
• Weill and Woerner (2015a) • Bhimani and Willcocks (2014) • Brynjolfsson and McAfee (2012)	RQ1c: What issues has digitisation presented to SA financial services companies?	• What are the key issues that have resulted from digitisation (digital technologies – SMACIT)? Please provide examples.	Verbatim feedback	Thematic analysis

Research problem: Boards as custodians of companies have to understand and lead digital transformation (Weill & Woerner, 2015b). CIOs can assist with the education (Valentine, 2014) and advising the board to respond (Weill & Woerner, 2015b) but how do CIOs engage boards on digitisation (Coertze & Von Solms, 2014a; MIT Center for Information Systems Research, 2015)?				
Literature Review	**Research questions**	**Source of data**	**Type of data**	**Analysis**
• Kahre et al. (2017) • Bharadwaj et al., 2013)	RQ1d: What are the views of strategy (i.e. the alignment view vs the single business strategy view) in SA financial services companies?	• Are the business and IT strategy independent? How is strategy formulated?	Verbatim feedback	Thematic analysis
• Institute of Directors South Africa (2016)	RQ2: What are the perceived roles of boards on digitisation in SA financial services companies?	• In what ways does the board support digitisation? Please provide examples. • In what ways does the board direct value creation? • How does the board influence strategy?	Verbatim feedback	Thematic analysis
• Valentine (2016) • Coertze and Von Solms (2014a) • Sarrazin and Willmott (2016)	RQ2a: What is the board's role in IT governance?	• How do boards see themselves as catalysts for digital transformation? Or: How do CIOs see the board as a catalyst for digital transformation? Please provide examples? • How does the board govern risk & compliance? • How does the board monitor performance?	Verbatim feedback	Thematic analysis

Research problem: Boards as custodians of companies have to understand and lead digital transformation (Weill & Woerner, 2015b). CIOs can assist with the education (Valentine, 2014) and advising the board to respond (Weill & Woerner, 2015b) but how do CIOs engage boards on digitisation (Coertze & Von Solms, 2014a; MIT Center for Information Systems Research, 2015)?

Literature Review	Research questions	Source of data	Type of data	Analysis
• Kark et al. (2017) • Valentine (2014) • Weill and Woerner (2015b) • Hodgson and Lane (2010) • Enns et al. (2003) • Haffke et al. (2016) • Singh and Hess (2017)	RQ3: What are the perceived roles of CIOs on digitisation in SA financial services companies?	• Describe the role of the CIO on digitisation in the company's context? • What are examples of ways that CIOs have used to convince board members to support digitisation? • In what ways does the CIO educate the board on digitisation? • Do you have a CDO? What are your interactions with them?	Verbatim feedback	Thematic analysis
• Czinki and Hentschel (2016) • MIT Center for Information Systems Research (2015) • Bankewitz et al. (2016) • Chandhoke et al. 2015)	RQ4: How do CIOs of SA financial services engage boards on digitisation?	• What are examples of initiatives that the CIO has taken to engage the board on digitisation? • When and how should the board and the CIO interact? • What topics should (or could) the board and the CIO discuss? • How do these topics come about? • How does the CIO establish rapport and gain the board's trust on digitisation?	Verbatim feedback	Thematic analysis
• Turel and Bart (2014) • Fitzgerald et al. 2013)	RQ5: How have CIO-board engagements influenced company performance?	• What are examples of where CIO-board engagements have influenced company performance?	Verbatim feedback	Thematic analysis

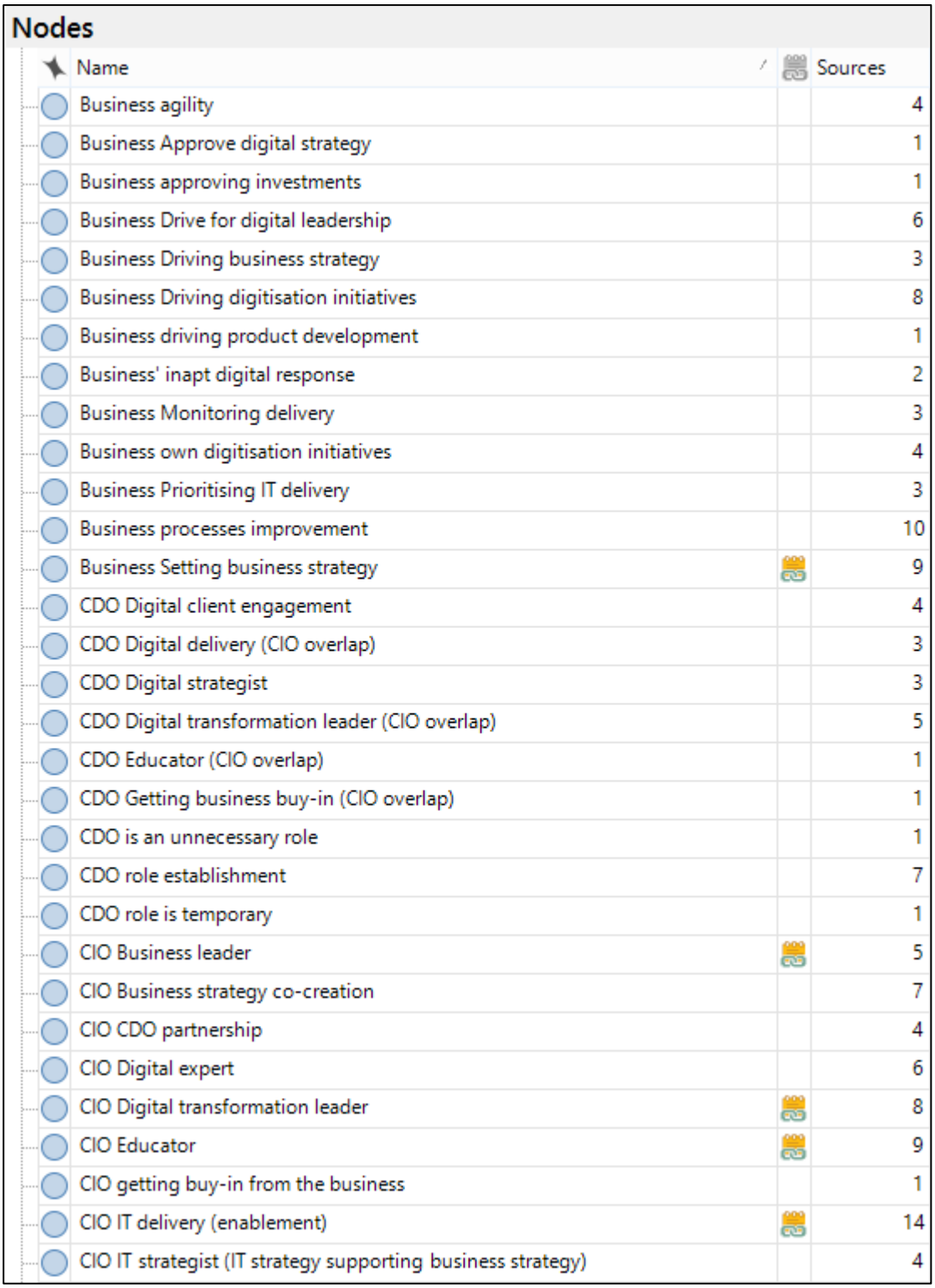
Appendix 3: Example of nodes (analysis phase 2)



Nodes

Name	Sources
Agile development	5
Analytics enabled customer centricity	9
Antagonistic client base	3
Assessing value from digital initiatives	1
Board IT delivery oversight	12
Board Approval of major investments	9
Board approves business strategy proposed by executives	7
Board Audit committee	3
Board business performance oversight	5
Board catalysing digital initiatives	6
Board committees discharge some functions	2
Board Compliance governance	5
Board Critiquing business strategy	7
Board Customer committee	2
Board Customer outcome governance	7
Board Ensuring best practices are upheld (raising questions)	3
Board Ensuring business and IT partnership	2
Board Ensuring long term business sustainability	6
Board IT Co oversight of technical IT aspects	4
Board IT committee	9
Board IT performance oversight	10
Board IT strategy oversight	7
Board Leveraging governance IT frameworks	2
Board oversight of digitisation response	8
Board Protect stakeholder interests	4
Board reputational risk oversight	2
Board Risk committee for risk governance	6
Board risk oversight	12
Board Security oversight	7
Board sets and steers strategic direction	9
Brand management	6

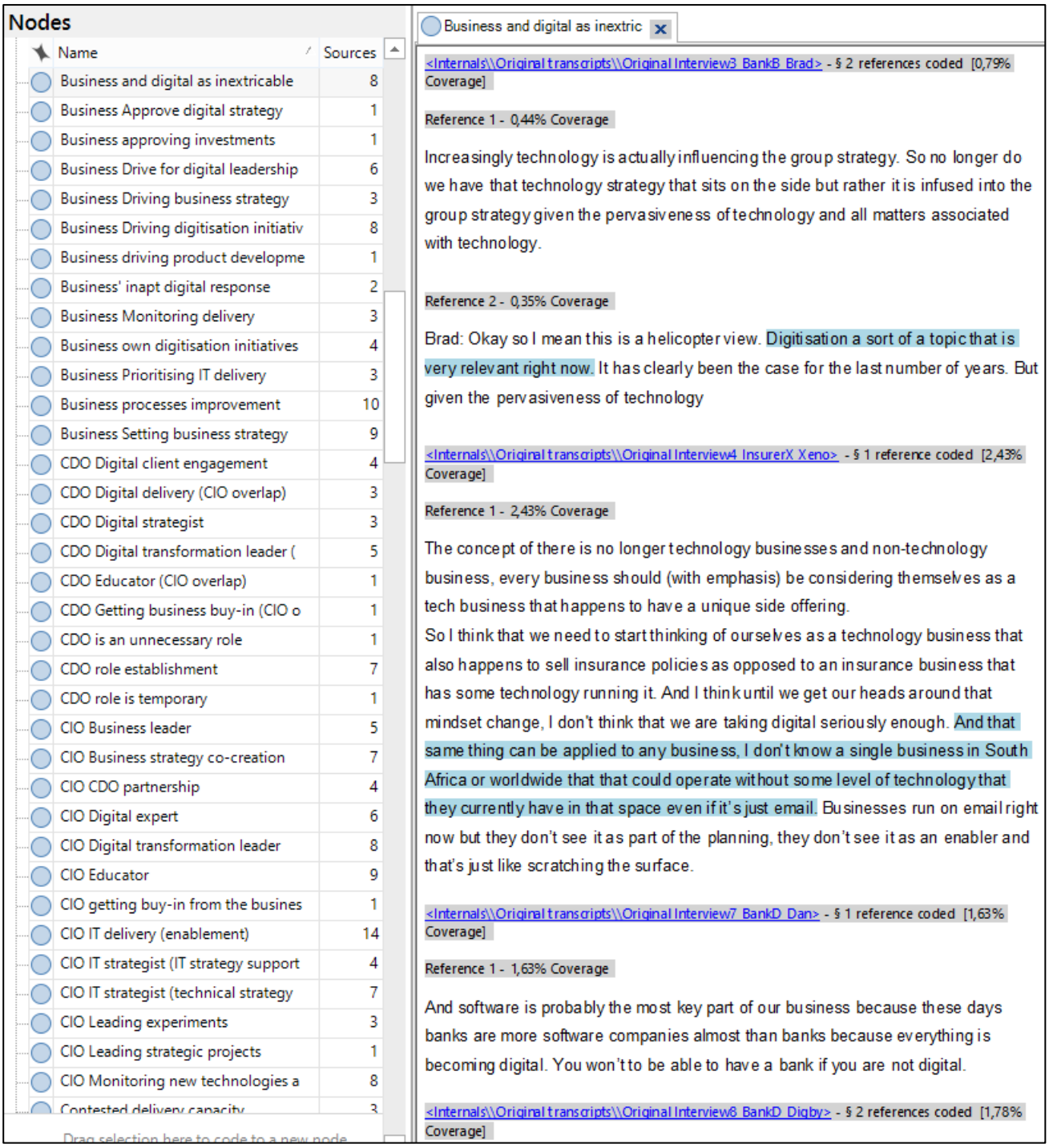
Example 1 of NVivo nodes.



Nodes

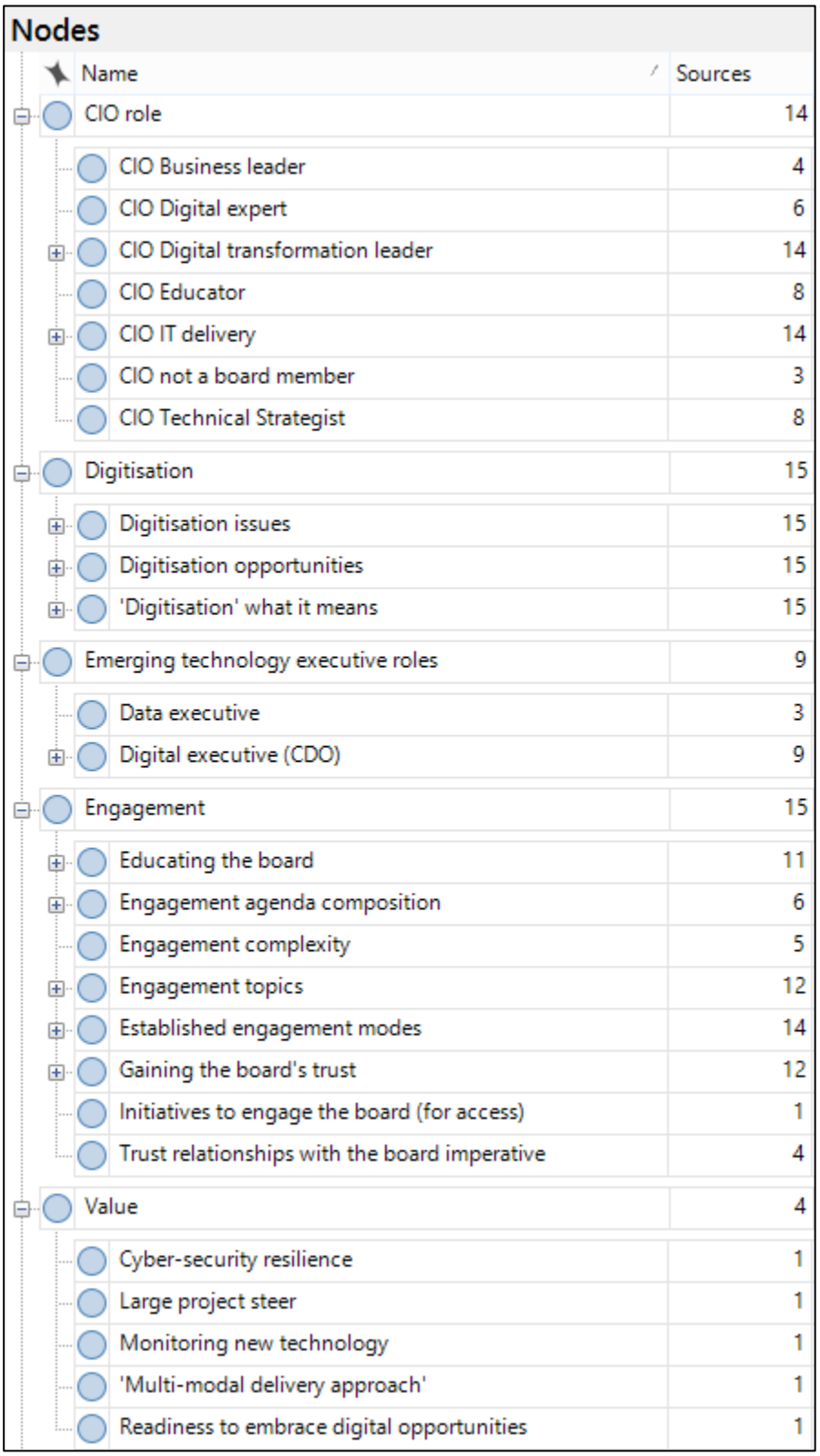
Name	Sources
Business agility	4
Business Approve digital strategy	1
Business approving investments	1
Business Drive for digital leadership	6
Business Driving business strategy	3
Business Driving digitisation initiatives	8
Business driving product development	1
Business' inapt digital response	2
Business Monitoring delivery	3
Business own digitisation initiatives	4
Business Prioritising IT delivery	3
Business processes improvement	10
Business Setting business strategy	9
CDO Digital client engagement	4
CDO Digital delivery (CIO overlap)	3
CDO Digital strategist	3
CDO Digital transformation leader (CIO overlap)	5
CDO Educator (CIO overlap)	1
CDO Getting business buy-in (CIO overlap)	1
CDO is an unnecessary role	1
CDO role establishment	7
CDO role is temporary	1
CIO Business leader	5
CIO Business strategy co-creation	7
CIO CDO partnership	4
CIO Digital expert	6
CIO Digital transformation leader	8
CIO Educator	9
CIO getting buy-in from the business	1
CIO IT delivery (enablement)	14
CIO IT strategist (IT strategy supporting business strategy)	4

Example 2 of NVivo nodes.



Example of an NVivo node.

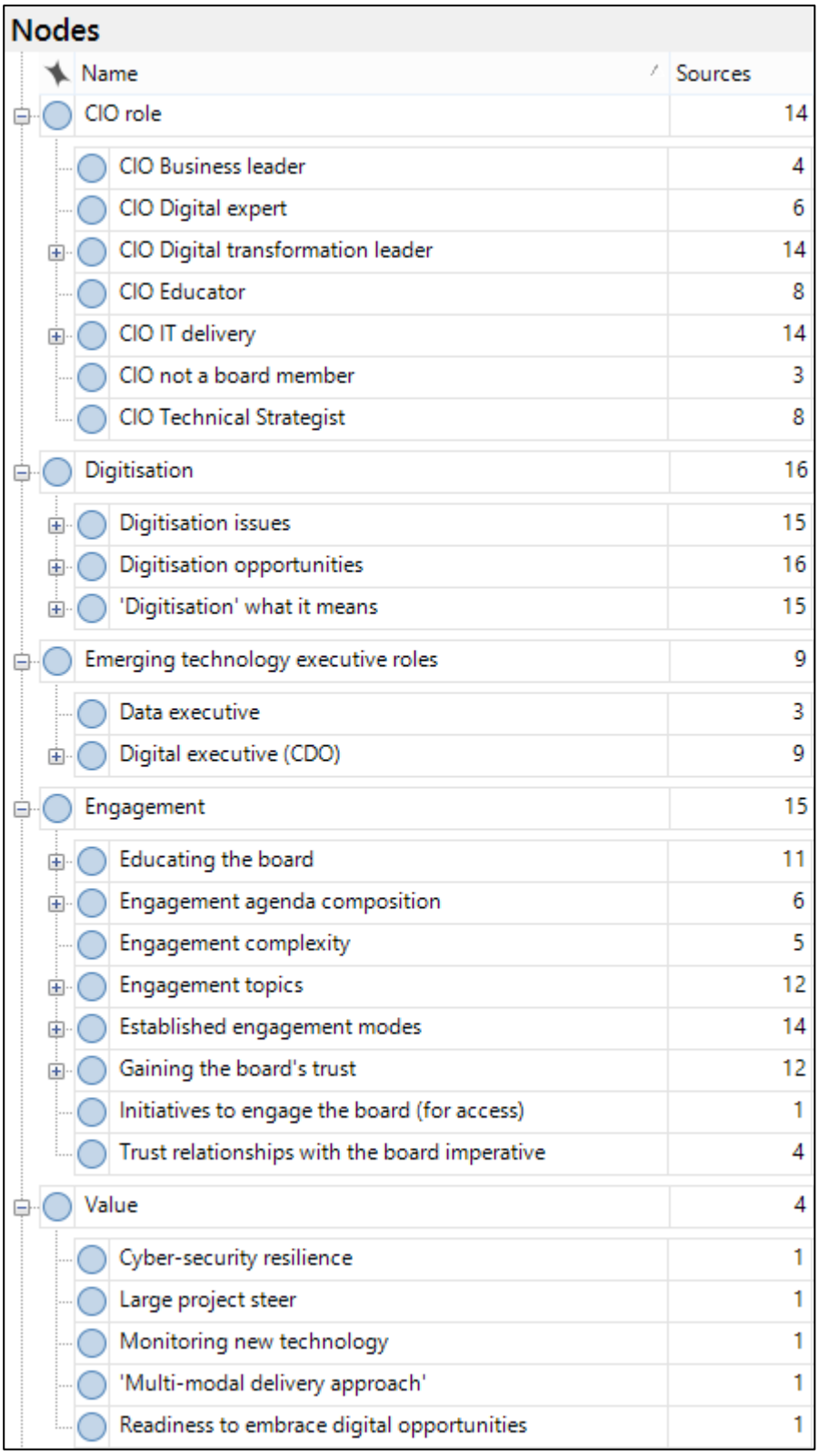
Appendix 4: Initial themes and sub-themes (analysis phase 3)



Nodes

Name	Sources
CIO role	14
CIO Business leader	4
CIO Digital expert	6
CIO Digital transformation leader	14
CIO Educator	8
CIO IT delivery	14
CIO not a board member	3
CIO Technical Strategist	8
Digitisation	15
Digitisation issues	15
Digitisation opportunities	15
'Digitisation' what it means	15
Emerging technology executive roles	9
Data executive	3
Digital executive (CDO)	9
Engagement	15
Educating the board	11
Engagement agenda composition	6
Engagement complexity	5
Engagement topics	12
Established engagement modes	14
Gaining the board's trust	12
Initiatives to engage the board (for access)	1
Trust relationships with the board imperative	4
Value	4
Cyber-security resilience	1
Large project steer	1
Monitoring new technology	1
'Multi-modal delivery approach'	1
Readiness to embrace digital opportunities	1

Initial themes and sub-themes 1.

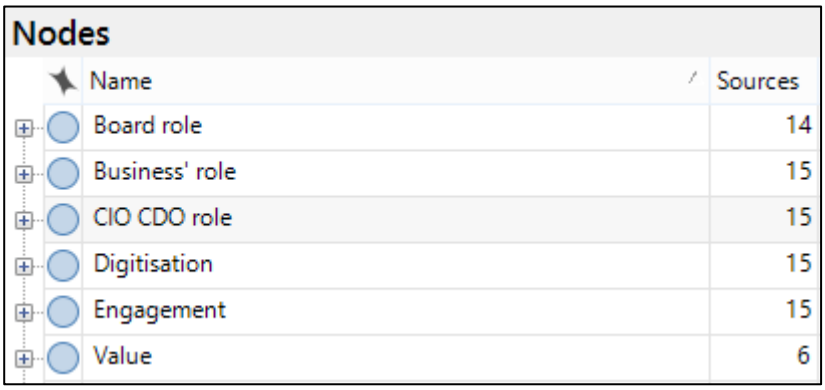


Nodes

Name	Sources
CIO role	14
CIO Business leader	4
CIO Digital expert	6
CIO Digital transformation leader	14
CIO Educator	8
CIO IT delivery	14
CIO not a board member	3
CIO Technical Strategist	8
Digitisation	16
Digitisation issues	15
Digitisation opportunities	16
'Digitisation' what it means	15
Emerging technology executive roles	9
Data executive	3
Digital executive (CDO)	9
Engagement	15
Educating the board	11
Engagement agenda composition	6
Engagement complexity	5
Engagement topics	12
Established engagement modes	14
Gaining the board's trust	12
Initiatives to engage the board (for access)	1
Trust relationships with the board imperative	4
Value	4
Cyber-security resilience	1
Large project steer	1
Monitoring new technology	1
'Multi-modal delivery approach'	1
Readiness to embrace digital opportunities	1

Initial themes and sub-themes 2.

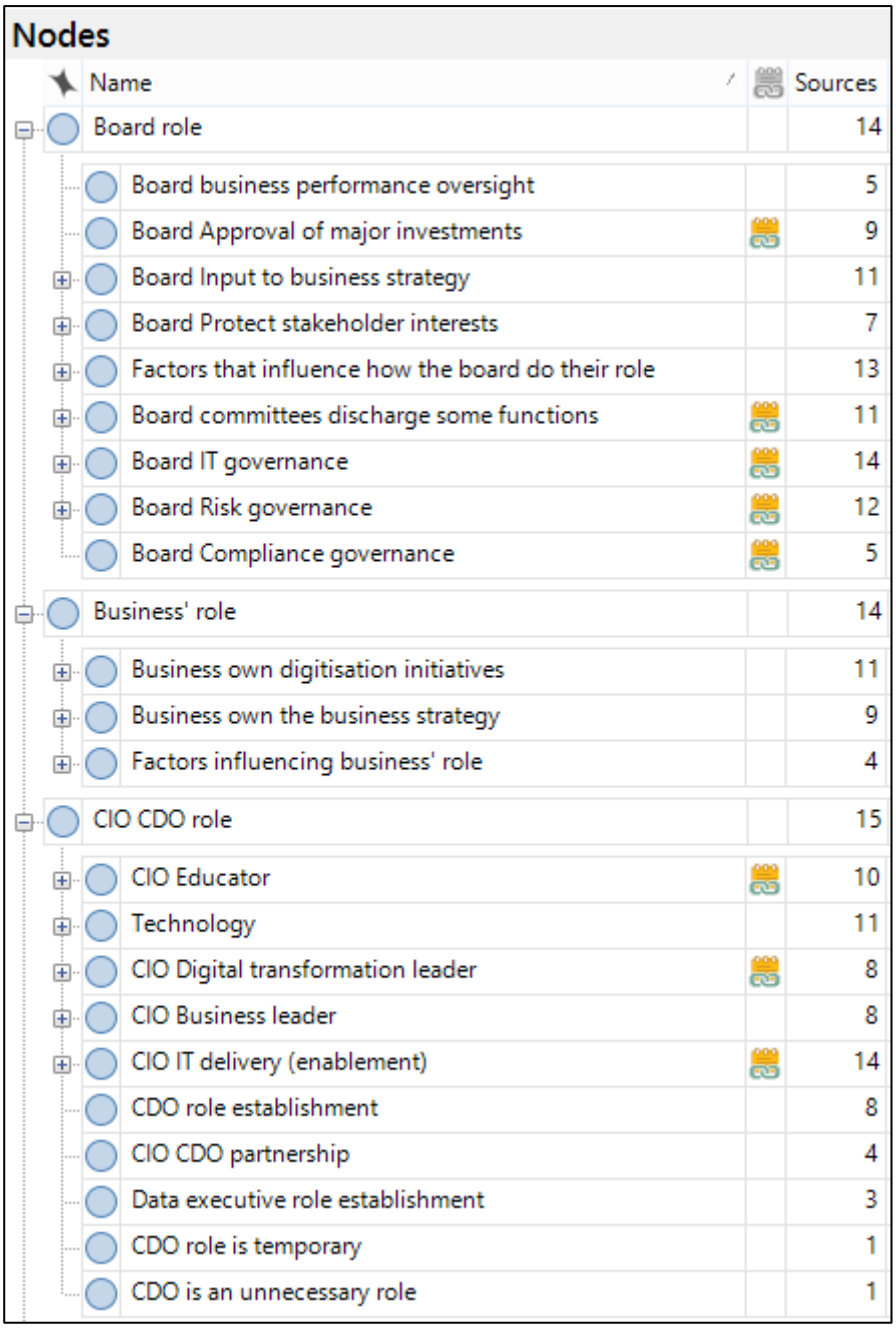
Appendix 5: Refined themes and sub-themes (analysis phase 4)



Nodes

Name	Sources
Board role	14
Business' role	15
CIO CDO role	15
Digitisation	15
Engagement	15
Value	6

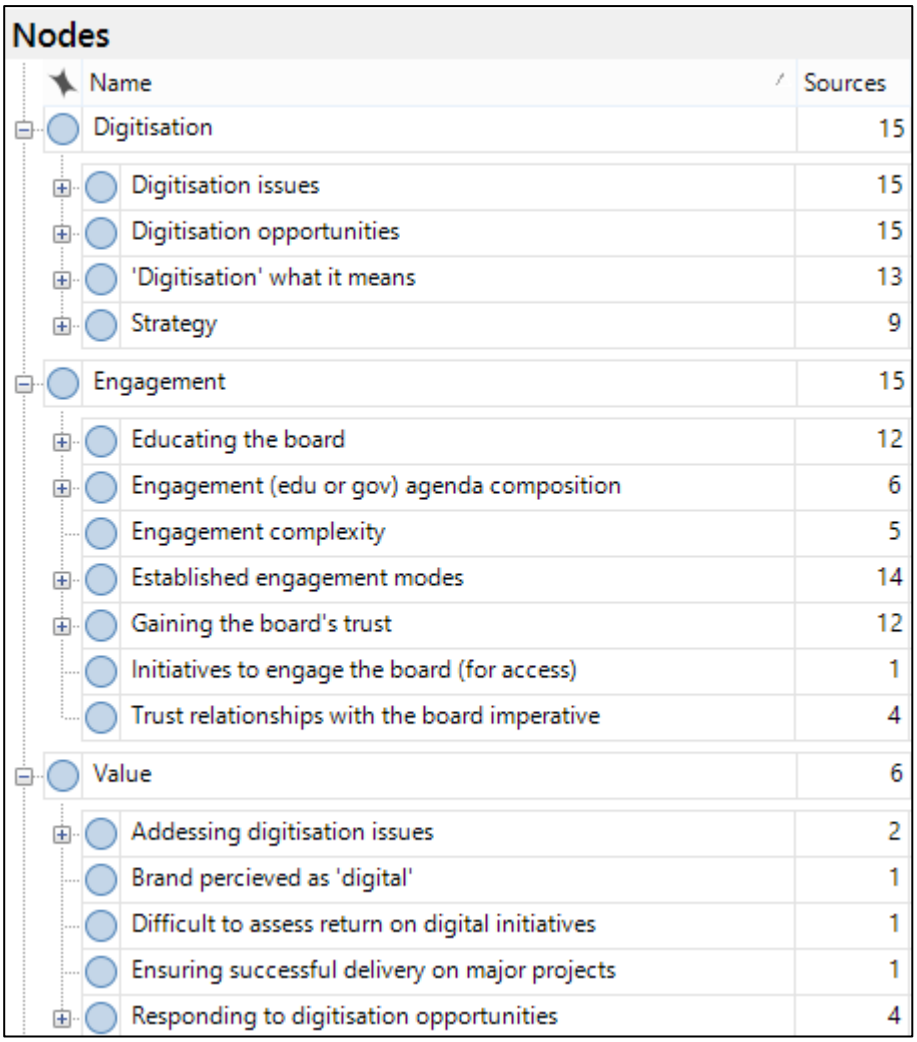
Refined themes.



Nodes

Name	Sources
Board role	14
Board business performance oversight	5
Board Approval of major investments	9
Board Input to business strategy	11
Board Protect stakeholder interests	7
Factors that influence how the board do their role	13
Board committees discharge some functions	11
Board IT governance	14
Board Risk governance	12
Board Compliance governance	5
Business' role	14
Business own digitisation initiatives	11
Business own the business strategy	9
Factors influencing business' role	4
CIO CDO role	15
CIO Educator	10
Technology	11
CIO Digital transformation leader	8
CIO Business leader	8
CIO IT delivery (enablement)	14
CDO role establishment	8
CIO CDO partnership	4
Data executive role establishment	3
CDO role is temporary	1
CDO is an unnecessary role	1

Refined themes and sub-themes 1.



Nodes

Name	Sources
Digitisation	15
Digitisation issues	15
Digitisation opportunities	15
'Digitisation' what it means	13
Strategy	9
Engagement	15
Educating the board	12
Engagement (edu or gov) agenda composition	6
Engagement complexity	5
Established engagement modes	14
Gaining the board's trust	12
Initiatives to engage the board (for access)	1
Trust relationships with the board imperative	4
Value	6
Addessing digitisation issues	2
Brand percieved as 'digital'	1
Difficult to assess return on digital initiatives	1
Ensuring successful delivery on major projects	1
Responding to digitisation opportunities	4

Refined themes and sub-themes 2.

Appendix 6: UCT Ethics approval

[UCT Ethics in Research] Engaging boards on digitisation

Chao.mulenga=uct.ac.za@email.submittable.com on behalf of UCT Ethics in Research <Chao.mulenga@uct.ac.za>

Reply all

Thu 2017-02-16, 06:29 PM

Ishe Tinomuvonga Madzime

Blocked content will be shown while this message is open.

Flag for follow up. Start by 28 January 2018. Due by 28 January 2018.

IsheMadzime-Engagi...

1 MB

Download Save to OneDrive - University of Cape Town

Dear Ishe Madzime,

Thank you for submitting your Biosafety application titled: Engaging boards on digitisation. We are pleased to inform you that your application has been approved.

Please anticipate a formal letter, from the Faculty of Commerce Ethics Committee, email Samantha Alexander.

Regards,
Dr Chao Mulenga
Acting Ethics in Research Committee

You can go here to view the submission:
http://universityofcapetown.submittable.com/user/submissions/7021637

UCT Ethics approval.