Gordon Institute of Business Science
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Leadership competencies for the Fourth Industrial Revolution for banking in South Africa

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Abstract

The Fourth Industrial Revolution (4IR) is a broad and complex subject which has presented many challenges to leaders in the banking industry. Although many frameworks exist, the literature is limited in defining the skills required by leaders in the banking industry. This study aims to identify the competencies required by leaders in the banking industry in order to lead through the fourth industrial revolution.

A qualitative, exploratory research method which involved ten face-to-face interviews with leaders currently employed in the banking industry was undertaken to gain insights on the competencies required for effective leadership. The participants included leaders such as CIO's, Heads of Departments and Senior Managers.

The literature on leadership competency frameworks indicates 15 critical skills that enable effective leadership including but not limited to, Critical analysis and judgment, Vision, Empowerment and Development. However, the study identified additional skills that are critical for leaders in the banking industry, i.e. Business and IT Acumen, Education, and Training. The researcher presents their findings in a proposed model in the final chapter. The findings derived from this study contributes to the extant literature in the field of leadership in banking.

Keywords

Fourth Industrial Revolution, Leadership, Transformational leadership, Digital transformation, Competencies

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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Gavin Govender

11 November 2019

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Chapter 1: Introduction to the Research

1.1 Introduction

The technological advancement that is transforming the way in which one works and lives is known as the Fourth Industrial Revolution (4IR) (Schwab, 2016). The 4IR is a merger of digital, physical, and biological technologies, this is being experienced through the Internet of Things, Big Data and Artificial Intelligence (Maynard, 2015). The transition to the 4IR has forced companies and leaders to reconsider their core business models and embrace the technological advancements that are being made.

Uber has transformed the taxi industry by allowing consumers to book a ride at their convenience through its smartphone application. Airbnb has impacted the accommodation reservation space that allows people to rent their homes or free space to potential guests. Needless to say, Uber does not own any vehicles nor Airbnb any property. Amazon, which started off selling books, has transformed the online retail space and now sells everything and anything a consumer could possibly need, by building an ecosystem around their customer. Numerous industries have been transformed since the advent of the 4IR, and the banking industry is not exempt.

Customers are increasing their dependence on internet banking facilities and mobile applications, thereby reducing the need for physical premises (branches) and face-to-face interactions. However, the response from banks to this changing phenomenon has been slow in terms of the technological threats and opportunities presented by the 4IR. The shift to digital banking has been an unwieldy journey for banks due to the reliance on legacy systems entrenched in the organisation.

The traditional banking model placed the branch at the centre of the customers' banking experience and all interactions that the customer required would originate within the branch (Padmaavathy & Adalarasu, 2015). The concept of traditional banking is being revolutionised by the shift caused by digital transformation (Sia & Soh, 2016). The evolution of technology has resulted in the customer being able to conduct their banking requirements via multiple channels namely, internet banking and mobile phone applications (Padmaavathy & Adalarasu, 2015).

Customers are embracing technology and incorporating technology more into their daily lives. The reliance on the internet, e-commerce, tablets and smart phones has increased and disrupted the means by which customers bank. Therefore, the need for face-to-face interactions and a physical bank branch is reducing.

Another move by the banking industry is the use of technology to deliver new products and services in more effective ways (Nuyens, 2019). The ultimate objective of innovation is to meet the increasing demand of customers' needs (Nuyens, 2019). Hence, banks are changing from the inside by becoming more agile with their projects and learning to think digital (Nuyens, 2019).

Although, the emergence of the 4IR is rooted in technology, there is a call for strong leadership competencies to lead the transition from traditional industries to a digital environment (Loonam, Eaves S, Kumar & Parry, 2018). However, developing leaders has been a significant challenge in most organisations. Cumberland, Herd, Alagaraja and Kerrick (2016) state that since 2010 the development of leaders has been the most important skill businesses have needed to achieve.

Shamim, Cang, Yu and Li (2016) state that specialised leadership should be employed for the 4IR to accelerate the process of innovation and learning. Of the numerous leadership styles, transformational leadership is most commonly discussed in relation to the 4IR (Shamim et al., 2016).

Numerous studies show the transformational leadership competencies that a leader should employ (Dulewicz & Higgs, 2005), however, Hess, Benlian, Matt and Wiesböck (2016) state that literature has not provided an holistic approach to the development of a digital transformation. This narrative which is supported by Loonam et al. (2018) who states that literature on digital transformation is fragmented and only provides guidance. This indicates a knowledge gap that will be explored in this study. This research aims to understand the competencies that are required by leaders within the banking industry since the advent of the 4IR.

1.2 Research Purpose

The purpose of this study is to understanding of the leadership competencies that are required subsequent to the advent of the 4IR in the banking industry. Hess et al. (2016) and Loonam et al. (2018) both refer to a knowledge gap in literature that shows leadership competencies in traditional business models such as the banking industry is limited.

The competencies of leaders is vital in equipping organisations to navigate effectively through the 4IR (Loonam et al., 2018). Technology is fast impacting all business and banks and financial institutions are not exempt from this transition (Dintrans, Bahl & Anand, 2016). Banks embrace new technologies to deliver products and services in more effective ways (Nuyens, 2019). Banks are tasked with keeping abreast of new technologies and customer needs. Thus, the role of a leader in an organisation that is transitioning to a digital strategy is crucial (Larjovuori, Bordi & Heikkilä-Tammi, 2018).

1.3 Research Problem

In order to address the research needed, the study first identified through literature that a transformational leadership style is required to lead in the 4IR. This is a narrative supported by Shamim et al. (2016), World Economic Forum (2019) and Ready and Mulally (2017) who all postulate that the transformational leadership style is the most linked leadership style to the 4IR.

After identifying the transformational leadership style for the 4IR, a comprehensive understanding of the competencies linked to transformational leadership identified by Dulewicz and Higgs (2005) was conducted. The literature review (Chapter 2) provides a deeper understanding of the competencies.

Loonam et al. (2018), Hess et al. (2016) and Larjovuori et al. (2018) indicate a knowledge gap in the literature of digital leadership. A case can be made that not many empirical studies deal with leadership competencies required for the 4IR in the banking industry. We understand the competencies that are required of a leader, but we do not know or understand the competencies that are required of a leader within the South African banking industry.

The research aims to benefit both present and future leaders in the banking industry by providing a leadership competency model to assist in digital transformation. The model will be developed through a combination of the existing theories on leadership and the insights gained through interviews held with leaders within the banking industry.

1.4 Scope of Research

An exploratory study was carried out to identify the leadership competencies required for the 4IR. The scope of this research evaluated leaders in the banking industry within the South African context.

Literature on leadership theory is complex and can be approached from various perspectives. However, for the purposes of this study, the focus is on behavioural theories of leadership (Mumford, Todd, Higgs & McIntosh, 2017).

The research was conducted on two levels. First data was collected from literature that underpinned the research problem. Thereafter, face-to-face interviews were held with leaders within the banking industry to evaluate the competencies of leaders that are involved in digital transformation.

The South African banking industry will be used as a proxy for this research. This is due to the limited time frame of this study and the researcher's prerequisite access to participants. Future research on the leadership competencies required in the banking industry can be undertaken in other countries where the banking industry differs from South Africa.

1.5 Research Definitions

For purposes of this research the following keywords are defined as follows:

Fourth Industrial Revolution is transforming the means by which one works and lives (Schwab, 2016). The fourth industrial revolution is represented by automation, connectivity based on artificial intelligence (AI), big data, robotics and the internet of things (IoT), all of which contribute to the development of automation that can increase productivity and intensify production and services (Park, 2018).

Leadership is a process of influence that occurs when people acknowledge someone as their leader to accomplish a common goal (Silva, 2016). Kumar Sharma and Shilpa (2013) postulate that leadership is one's ability to influence others to achieve a common goal and accomplish the organisations' goals in a means that is more cohesive and coherent.

Transformational leadership can be defined as leaders who broaden and elevate the interest of their employees, awareness and acceptance of the organisations' purposes is generated (Bass, 1985). Transformational leadership is capable of transcending followers to achieve a common goal, leaders are able to influence followers (Alqatawenah, 2018).

Digital transformation encompasses the changes that are taking place within an organisation through the use of digital technologies that is presently being experienced in the banking sector (Vial, 2019). Parviainen, Tihinen, Kääriäinen and Teppola (2017) postulate that digital transformation is caused by the adoption of digital technologies in the organisation that impacts roles and business offerings.

Competencies defined as underlying characteristics of an individual that is causally related to effective or superior performance in a job (Mei Kin, Abdull Kareem, Sahari Nordin, Wai Bing & Wai, 2017).

1.6 Research Structure

To address the research problem identified, the structure of this research study is set out as follows:

- **Chapter One:** this chapter indicates the need for the research and states the research objectives.
- **Chapter Two:** demonstrates the need for the study by using recent academic literature.
- **Chapter Three:** outlines the research questions, supported by academic literature identified in the preceding chapter.
- **Chapter Four:** defines and explains the research methodology employed for the study.
- **Chapter Five:** presents the results of the research conducted.

- **Chapter Six:** discusses and analyses the results presented in the preceding chapter.
- **Chapter Seven:** presents the main findings of the study and provides recommendations and future research opportunities**.**

Chapter 2: Literature Review

2.1 Introduction

Ready and Mulally (2017) state that successful organisational transformation requires executives to align to the purpose, performance and principles within their company. However, this is not easily achieved and requires a vast range of leadership competencies.

The intention of this literature review is to establish a basis that will address the research problem. This will be achieved by analysing theories on leadership to the approaches needed for the fourth industrial revolution (4IR). This study seeks to understand those leadership competencies that are required for the 4IR within the South African banking industry.

The introduction of the 4IR has resulted in a shift in the traditional banking model (Sia & Soh, 2016) being transformed by means of digital technology (Nuyens, 2019). Loonam, Eaves, Kumar and Parry (2018) have stated that literature on digital transformation is fragmented with recent academic work providing guidance on the aspects of leadership on digital transformation.

The literature reviewed assesses whether the transformational leadership competencies identified apply in the context of leading in the digital era. The study assesses the competencies of leaders that are necessary to impact the shift from the traditional business model to that of a digital transformation model.

2.2 Leadership

Silva (2016) postulates that leadership is a process of influence that occurs when people acknowledge someone as their leader to accomplish a common goal. The commonly accepted definition of leadership is about achieving a common goal through communication and influence over followers (Raziq, Borini, Malik, Ahmad & Shabaz, 2018). Leadership is a complex subject that can be studied by different means thereby allowing for no absolute definition. Leader are a source of inspiration and motivation for others. A leader also sets the example that is required for the organisation and shares their vision on the future for the team and that of the organisation (Raziq et al., 2018).

With the emergence of the 4IR, leaders in organisations are confronted with a myriad of complexities and uncertainties that the organisation is experiencing (Elkington, 2018). Leaders must be able to navigate their own personal transformation while providing guidance to their subordinates (World Economic Forum, 2019). Organisations require leaders who are agile in terms of their roles and identities (World Economic Forum, 2019). Agile leaders are able to adapt to the changes, challenges and uncertainty in their respective organisations (Karia & Abu Hassan Asaari, 2019).

In assessing the most innovative companies in the world, Apple Inc. is the one of the most prominent. Numerous case studies suggest that Apple's rise was due to the leadership style of Steve Jobs and not his technical abilities. Jobs was able to extract the best out of his employees (Isaacson, 2012). The 4IR requires a specialised leadership style that is able to accelerate the process of innovation and learning. Transformational leadership is commonly discussed as a leadership style that is required of the 4IR (Shamim et al., 2016) (World Economic Forum, 2019) (Ready & Mulally, 2017). In addition to understanding transformational leadership, the competencies require further understanding (Loonam et al., 2018).

2.3 Transformational Leadership

Transformational leadership, developed in 1985 by Bernard Bass, "occurs when leaders broaden and elevate the interests of their employees, when they generate awareness and acceptance of the purposes and mission of the group, and when they stir their employees to look beyond their own self-interest for the good of the group" (Bass, 1985, p. 21).

Alqatawenah (2018), defines transformational leadership as a style that is capable of transcending followers to achieve a common goal, leaders have influence that is both profound and desirable on followers. Transformational leaders have a clear vision and can share this vision with their followers thereby transforming the organisations and its members.

Ready and Mulally (2017) states five essential skills for transformational leaders. Firstly, transformational leaders are able to tell compelling stories. Transformational leaders are able to use past events to motivate their followers for the future. They are able to link their heritage to the desired future and frame the organisational

challenge as the bridge between the two. This theory further supported by the World Economic Forum (2019), which states that transformational leaders are able to deal with complex problems that require a clear vision to be resolved.

Secondly, collective leadership capabilities are developed by demanding ownership and accountability from their followers actions. World Economic Forum (2019) states that this approach attracts, inspires and retains employees. Ready and Mulally (2017) elaborate that a sense of ownership is extended and that employees have a sense of ownership in the organisation's future.

Thirdly, transformational leaders instil innovation and growth disciplines in their followers. Since the advent of the 4IR a culture of innovation and experimentation needs to be fostered in organisations (World Economic Forum, 2019). Karia and Abu Hassan Asaari (2019) suggest that innovation is an important attribute for leadership. Innovation is focused on the future, is optimistic and seeks betterment for the organisation.

Fourth, transformational leaders honour their promises made to followers. Constantly monitoring performance of followers and rewarding accordingly. Transformational leaders are aware that their vision is supported by their followers, but they also need to reciprocate and reward the behaviour that they have envisioned.

Finally, transformational leaders employ a strategy that focuses on future talent. Leaders constantly assess the market for new skills that contribute to the vision of the organisation. Organisations with that focus on future talent have a built-in engine for growth, revitalisation and renewal.

4IR requires organisations to adopt a transformational leadership style that is able to elevate the performance of the organisation, inspire their followers and provide a balanced approach to work (De Sousa Jabbour, Jabbour, Foropon, & Godinho Filho, 2018). A balanced approach is further explained by Al-Malki and Juan (2018) who state that transformational leaders assist their subordinates with complex issues as this allows and provides an opportunity to teach their subordinates how to solve problems.

2.4 Concept of Competencies

Key attributes namely skills, knowledge, work experience and appropriate behaviour are fundamental for a task to be effectively executed. This is known as competencies (Croft & Seemiller, 2017). The concept of competencies originated from the work of David McClelland in the 1970s (Bolden & Gosling, 2006). A competency can be defined as an underlying characteristic of an individual that is causally related to effective or superior performance in a job (Mei Kin et al., 2018). In terms of leadership, competencies implies that leadership can be a skill that is taught and learned (Mei Kin et al., 2018).

The competencies of transformational leadership require further understanding (Loonam et al., 2018). A theoretical base that describes the competencies of transformational leadership is discussed further.

2.4.1 Transformational Leadership Competencies

Research has been conducted on the competencies of leaders and many models identified that can be applied by an individual and an organisation to help nurture the leadership skills that are required. Dulewicz and Higgs (2005) conducted extensive research reviewing theories which resulted in 15 leadership competencies which they clustered under the group of intellectual (IQ), emotional (EQ) and managerial (MQ) as illustrated in figure 1. Leadership and managers' capabilities require IQ, EQ and MQ (Müller, Geraldi & Turner, 2012).

Group	Competency
Intellectual Quotient (IQ)	Critical analysis and judgment
	Vision and imagination
	Strategic perspective
Managerial Quotient (MQ)	Engaging communication
	Managing resources
	Empowering

Group	Competency
	Developing
	Achieving
Emotional Quotient (EQ)	Self-awareness
	Emotional resilience
	Motivation
	Sensitivity
	Influence
	Intuitiveness
	Conscientiousness

Figure 1: 15 Competencies of leadership (Müller & Turner, 2010).

Part of a leader's responsibilities is to critically evaluate plans and actions, provide direction (IQ), while building and maintaining a relationship with their followers (MQ) and requires emotional resilience to respond to unexpected events and stress (EQ) (Müller et al., 2012). The definition of each competency is discussed below to provide an academic foundation for each competency.

2.4.2 Intellectual Quotient

Rafferty and Griffin (2004) state that this is an under- developed dimension in terms of transformational leadership. The dimension encompasses behaviours that are intended to increase the interest in followers. The effect of this dimension is to increase the abilities of followers in terms of conceptualising, comprehending and problem solving (Rafferty & Griffin, 2004).

- **Critical analysis and judgement** – transformational leaders foster followers to be creative and encourage innovative behaviour by encouraging followers to question assumptions, reframe problems and identify various solutions to problems (Tyssen, Wald & Spieth, 2014).
- **Vision and imagination** – leaders provide vision and a sense of mission that inspires and motivates their followers (Bednall et al., 2018).The future direction of the organisation is communicated to their followers, thereby providing a sense of inclusivity to the organisation (Dulewicz & Higgs, 2005).

- **Strategic perspective** – transformational leaders can map the strategic requirements for an organisation and thereafter communicate this vision to be successfully executed (Yucel, Mcmillan & Richard, 2014).

2.4.3 Managerial Quotient

Hossein, Hojjat, Zeinab, Esmaeil and Negar (2016) state that the managerial quotient is based on attaining the managerial abilities, team performance, employees' assessments, improving both team and individual performance and attaining the requirements for organisational success.

- **Resource management** – Zhu, Chew and Spangler (2005) state that for a transformational leader's vision to be successfully executed there is a dependence on human resource management. The leader needs to provide the blueprint on how to achieve the intended vision. It is the responsibility of the leader to empower their employees which will allow them to enact the intended vision. Further, transformational leaders identify employees that require individual development and growth.
- **Engaging communication** – through communication, transformational leaders are able to convey a strong sense of purpose, mission and motivate employees (Rita Men, 2014). Characteristics that form part of transformational leadership include being interactive, caring, visionary, inspirational and empowering communication behaviour. Transformational leaders are also willing to engage with their employees and seek their opinions and participation in the decision- making process (Rita Men, 2014).
- **Empowering** – transformational leaders empower their followers by allowing them to make decisions as this provides them with a sense of greater responsibility which in turn, increases their commitment to the organisation (Han, Seo, Yoon & Yoon, 2016). Leaders are to provide direction and allow employees to organise their own time and work schedule (Giles, 2016).
- **Developing** – encourages followers to take on more demanding tasks and roles thereby allowing employees them to grow within the organisation. A lot of time and effort are invested in coaching followers. This results improved performance and commitment to the organisation. Part of the development process is also critical feedback that highlights areas of improvement for the individual or the group.

- **Achieving** – Rehman and Waheed (2012) postulate that there is a correlation between a transformational leadership style and rational decision- making. This is further supported by Verma, Bhat, Rangnekar and Barua (2015) who observed that transformational leaders are likely to make decisions based on facts after meticulous analysis.

2.4.4 Emotional and Social Quotient

Duckett and Macfarlane (2003) state that emotional quotient (EQ) is the ability to know when and how to express emotion as well as being able to exercise a degree of control over one's emotions. Barling, Slater and Kelloway (2000) argue that emotional intelligence forms a large part of leadership and that leaders with a high emotional intelligence will portray more transformational leadership behaviours. Leaders who are able to control their emotions build on the trust and respect of their followers.

- **Self-awareness** – transformational leaders are required to self-observe and compare their own behaviour to that of those around them (Caldwell & Hayes, 2016). They are to be aware of their own feelings and exercise a degree of self-control over their emotions (Dulewicz & Higgs, 2005).
- **Emotional resilience** – is the ability to regain composure in a situation that is not the norm. A transformational leader needs to perform consistently, irrespective of the situation, and their behaviour needs to adapt accordingly (Dulewicz & Higgs, 2005).
- **Intuitiveness** – is being able to make a decisions with minimal data available. It draws on past experience to make a rational decision that will benefit both the team and the organisation (Dulewicz & Higgs, 2005).
- **Interpersonal sensitivity** – is aware of and considers needs and perceptions of others. Engages others on possible solutions to problems and listens attentively their contrubutions (Dulewicz & Higgs, 2005).
- **Influence** – leaders with high emotional intelligence can influence and persuade others to change their views. This is achieved with rationale and validity for change (William Brown & Moshavi, 2005).

- **Motivation** – whereby leaders motivate their followers, initiate a behaviour that moves people to act (Gilbert, Horsman & Kelloway, 2016). Part of leadership is motivating others to achieve results and make an impact, even in the face of rejection (Dulewicz & Higgs, 2005).
- **Conscientiousness** – is committed to the course even when challenged. A level of personal commitment is displayed to pursue a viable solution to a problem (Dulewicz & Higgs, 2005).

Effective leaders exhibit traits and behaviours that are required for different situations (Müller, Turner, Mü Ller, & Turner, 2010). The 15 competency profiles define the attributes portrayed by a transformational leader (Müller et al., 2010). Research has since indicated that different leadership competency profiles are related to leadership success. Further to this, soft skills such as communication, which is part of the managerial dimension, has emerged as one of the most important attributes for successful managers (Trivellas & Drimoussis, 2013).

The banking industry is experiencing a transition from manual systems to digital with the advent of the 4IR. Banks are constantly innovating to deliver new products and services to customers (Nuyens, 2019). Leaders have to embrace this change and adopt new a mindset for digital banking (Shamim et al., 2016).

2.5 The Theory on Banking

Since the last decade the banking industry over the last decade has been affected by an array of disruptions that have transformed the industry. From the global financial crisis of 2008, the subsequent recessions of many countries, slow economic growth and alternative monetary policies, all have affected the performance and strategies of banks (Molyneux & Wilson, 2016). Currently the banking industry is being transformed with technological advancements and the introduction of digital banking.

Digital banking places the customer at the centre of the banking experience, which is challenging the traditional banking model (Mbama & Ezepue, 2018). Traditional banking placed the bank branch at the centre of the customer's bank experience and all interactions originated within the branch (Padmaavathy & Adalarasu, 2015).

The phenomena of digital banking now means that banks need to communicate with their customers via an electronic medium, with the intention of creating a superior customer experience (Reydet & Carsana, 2017).

2.5.1 Digital Transformation in the Banking Sector

Digital transformation encompasses the changes that are taking place within an organisation through the use of digital technologies such as that which is being experienced in the banking sector (Vial, 2019). Embracing the digital transformation means that the traditional banking model is evolving and that banks need to understand the impact of digital transformation internally, in order to benefit the customer experience (Mbama & Ezepue, 2018).

Through digital transformation, banks are now able to leverage technology to enter new markets which previously held high barriers of entry (Parameswar, Dhir & Dhir, 2017). Through the availability of digital channels banks are able to offer customers services via their mobile phones. Customers are for example, now able to purchase products, pay accounts with ease and apply for life insurance. Researchers have postulated that online banking and the attitude of banks towards digital transformation are important indicators for service quality (Parameswar et al., 2017). Digital transformation aims to constantly innovate to meet customer's needs (Nuyens, 2019).

Through digital transformation, banks will be able to increase their revenues, as well as reduce their operational costs (Marinč, 2015). Omarini (2017) expects that by 2018 more than 40% of new inflow revenue will be generated from digital sales for banks based in Scandinavia, the United Kingdom and Western Europe. This profitability and efficiency capability will be far superior to that of the traditional banking model, thereby making it necessary to transition to a digital offering.

A framework to aid the transition to a digital strategy is provided to guide leaders (Loonam et al., 2018). This is a support tool to aid leaders during the implementation process by providing a holistic view of the strategic and operational factors deemed critical to digital transformation.

The framework is based on four themes which is referred to as leadership 'actions' and is categorised into an "organising framework," where "strategic" and "operational" organisational perspectives (horizontal view) and "internal" and "external" organisational perspectives (vertical view) are used to illustrate the characteristics of respective themes (Loonam et al., 2018)

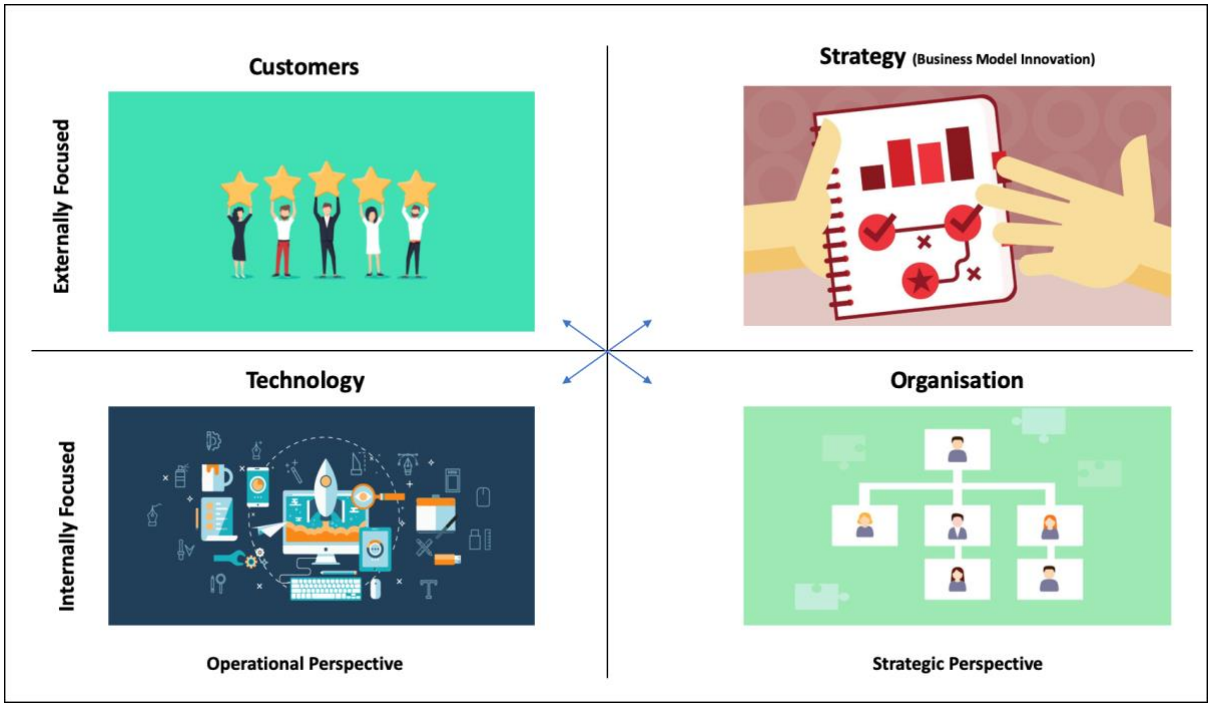

Figure 2: Leadership actions for digital transformation initiatives (Loonam et al. , 2018).

The themes identified by Loonam et al. (2018) are further discussed below. However, there is a limited amount of literature on digital transformation for leaders in the banking industry.

2.5.2 Customers

Digital transformation requires a high level of customer engagement. The traditional banking model allowed for a great propensity of face-to-face interactions, which allowed bank managers to build a relationship and develop a degree of trust with their customers (Quinton & Simkin, 2017). Customers now engaging via the internet, will pose a challenge for the industry.

Organisations now require a digital strategy that is a combination of social, mobile, analytics, cloud computing and Internet of Things (IoT) but still have the core operational backbone that offers operational excellence to their customers. Figure 3 illustrates that customer engagement needs to occur through the digital service platform, digitised solutions and the operational backbone (Sebastian et al., 2017).

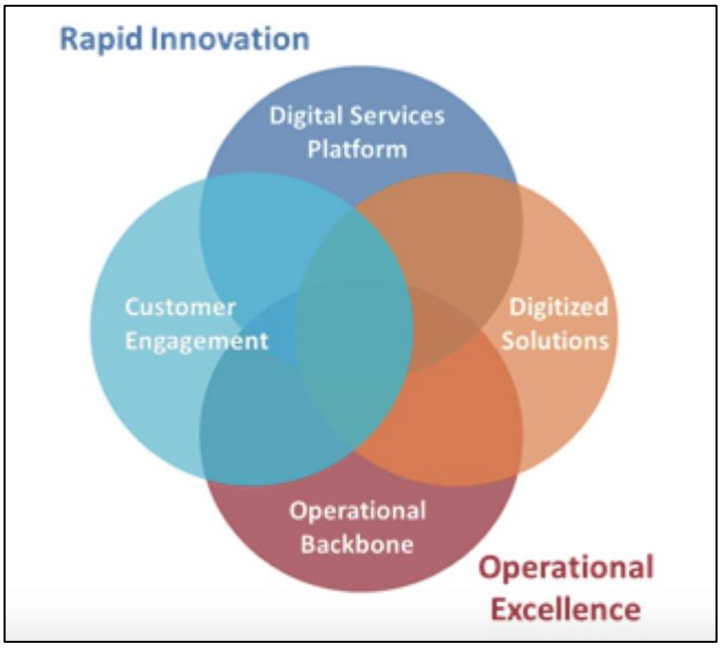

Figure 3: Customer engagement (Sebastian et al., 2017).

Customers have always been of importance to organisations, however, with the shift to digital transformation leaders need to rethink how they engage with their customers (Parameswar et al., 2017). Leaders have to manage relationships with customers via an electronic medium which is more challenging (Reydet & Carsana, 2017).

2.4.3 Strategy (Business Model Innovation)

A digital transformation strategy serves as a central concept that integrates, coordinates, prioritises digital technology and digital platforms within an organisation (Matt, Hess & Benlian, 2015). These technologies and platforms impact large parts of the business namely, products, business processes, sale and supply chains. The potential benefits of digital transformation are not limited, as new revenue streams can be created and innovative solutions for interacting with customers are available (Matt et al., 2015).

Figure 4 Digital strategies need to span across all strategies in the organisations and all other strategies should be aligned to the digital transformational strategy (Matt et al., 2015). The execution of a digital strategy may be met with resistance. Therefore, transformational leadership competencies are essential for the successful execution of a digital strategy (Matt et al., 2015).

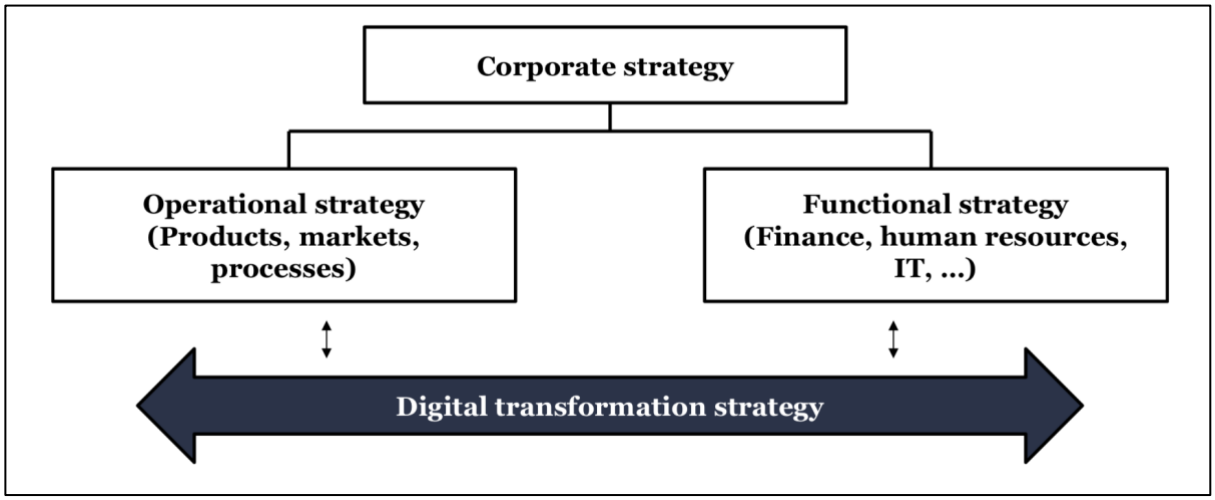

Figure 4: Digital transformation strategy (Matt et al., 2015).

However, integrating and exploiting a new digital transformation strategy is a challenge that is being experienced by all organisations (Hess et al., 2016). Four key dimensions provide a conceptual framework for a digital transformational strategy (Hess et al., 2016):

- The integration of technology is reflective of the organisation's approach and capability to explore and exploit new digital technologies.
- Value creation is dependent on the organisation's digital transformation strategy.
- Internal skills that are available to integrate, process and exploit new digital technologies.
- The financial dimension that is required to respond to the organisation's core business is investment into the digital transformational strategy.

Hess et al. (2016) provides a conceptual framework of how a digital transformation strategy may be integrated in an organisation. A digital transformation strategy is an enhancement on the existing business model, it is about integrating new technologies into the business operations (Loonam et al., 2018).

2.4.4 Technology

The integration of new technology in an organisation is based on three approaches, namely (i) an integrated approach to a system across all platforms in the organisation, (ii) data analytics to provide a competitive advantage, and (iii) cross platforms allowing for various systems to integrate (Loonam et al., 2018). These approaches have been identified as the most important aspects for adopting a technology- centric approach.

Customers have become self-sufficient due to the advancements in technology, resulting in customer relationships being digitally driven (Van Belleghem, 2015). Organisations need to use technology to not only maintain existing relations, but also to manage future relations. Technology is the key enabler of the shift to a digital transformation strategy. Leaders in the banking industry have realised the importance of integrating technology into banking operations that provides convenience for the customers (Parameswar et al., 2017).

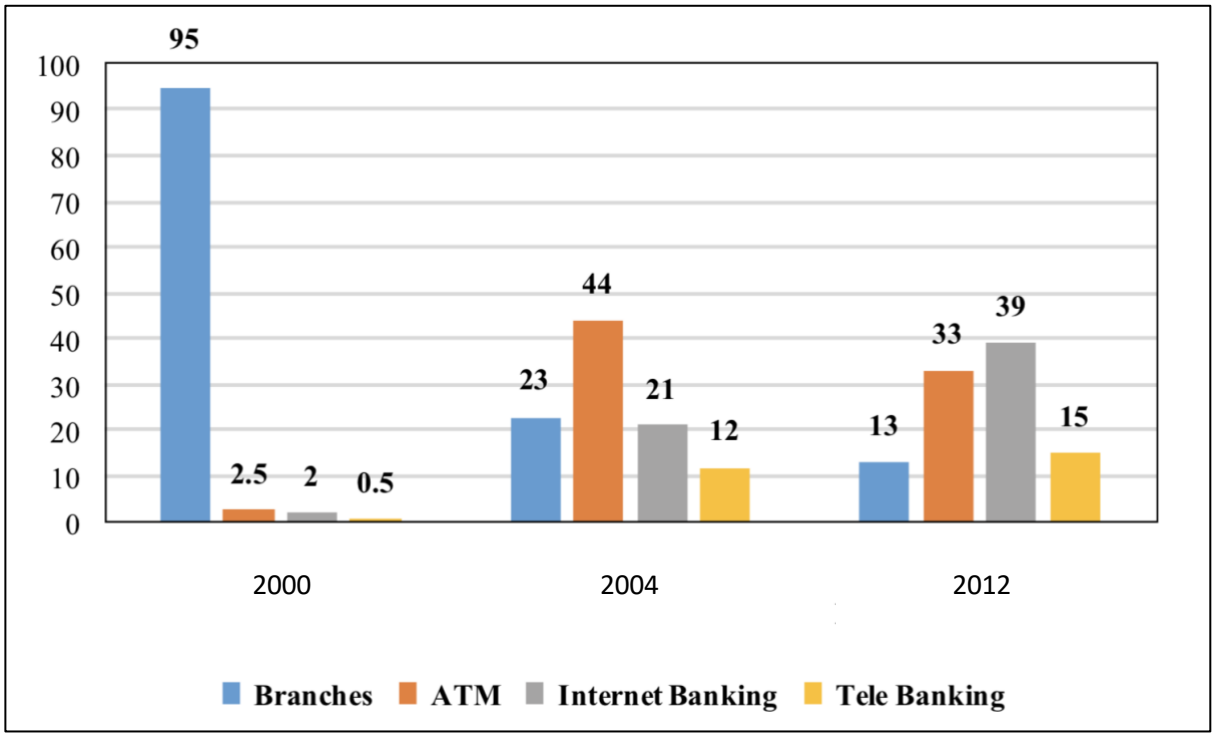

Figure 5: Transactions over the years (Parameswar et al., 2017, p.9).

Figure 5 is sourced from a study completed by Parameswar et al.(2017). The study was conducted on ICICI Bank in India. ICICI Bank started integrating technology from 2004 and noted an uptake in internet banking facilities. By 2012 it is important to note the shift of customers entering branches and utilising the internet banking facilities. By collecting the data on customers who used the internet banking facility, ICICI Bank could also offer customers more tailored products that were more aligned to the customers' needs.

The benefit of integrating technology is not limited to the customer experience. The internal processes of the bank also improved significantly. The new architecture increased the volume of transactions processed from 400,000 per day in 2000 to more than 10 million by 2016. Leaders need to comprehend the power that technology can have on an organisation (Kane, Palmer, Phillips, Kiron & Buckley, 2015).

2.4.5 Organisation

When embarking on a digital transformation journey an organisation needs to be aware of three approaches namely, (i) recognise the importance of a digital offering, (ii) understand the key objectives and requirements for delivering upon digital transformation and (iii) realise that the benefit is for the organisation (Loonam et al., 2018). Agility, defined as the capability to identify and implement changes at a faster pace has an important role in digital transformation (Gimpel & Röglinger, 2015).

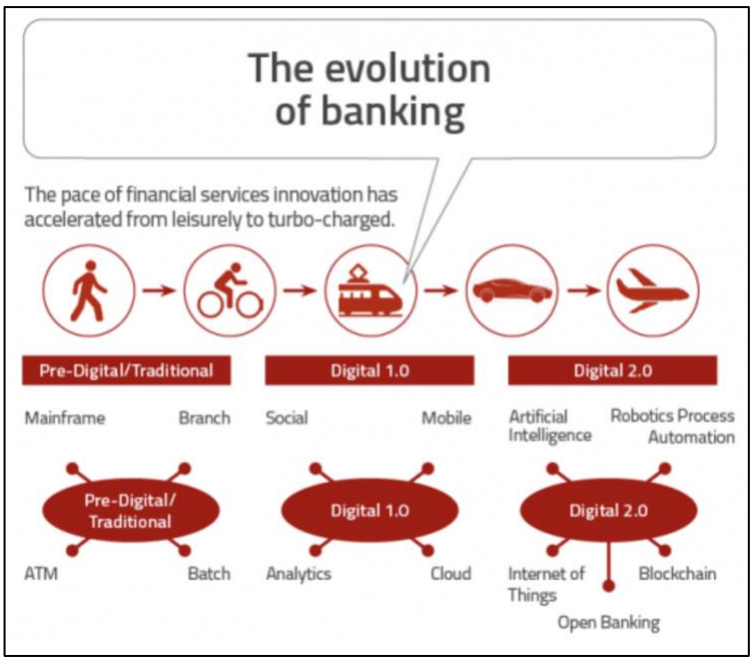

Figure 6: The evolution of banking (1st Finance, 2018 [as cited in Congnizant, 2017]).

Figure 6 illustrates the evolution that banks have experienced. Shifting the traditional model of branches and automated teller machines (ATM) to mobile devices and data analytics. However, banks need to constantly evolve and prepare for the next phase of transformation which will include blockchain and robotic process automation (RPA).

An organisation's ability to learn is an essential ingredient for innovation. Innovation fosters the capacity to develop and adapt to environmental changes (Schuchmann & Seufert, 2015). The development, learning and innovation process is interlinked. The ability to innovate in an organisation depends to a large extent on the ability to be creative and reflect on past experiences (Schuchmann & Seufert, 2015).

2.6 Leadership in Digital Banking

Changing from a traditional business model to a digital transformation model requires a leader that is cognisant of customer needs, strategy, technology and the organisation (Loonam et al., 2018). Louw, Muriithi, & Radloff (2017) state that the leadership in banking industry needs to shift to a transformational leadership style. The leadership competencies identified by Louw et al. (2017) correlate to those of Dulewicz & Higgs (2005) and Müller & Turner (2010).

Dery, Sebastian and Van Der Meulen (2017) study on DBS Bank found that the executive team directed the senior leadership team to be responsible for the digital transformational journey to improve the employee and customer experience. Leaders were mandated to focus more on innovation rather than control. Leaders were tasked to engage with employees on potential solutions to problems and incorporate employees' opinions. Leaders were also required to identify teams and individuals for further training and development, to embark on more digital thinking and skills. Leaders were also required to enrol in development and training programs.

During the digital transformation leaders were taught to be resilient and adaptive, understand the challenges of digitalisation and the significance of having a shared vision of the organisation (Sia & Soh, 2016). The leaders at DBS bank have exhibited the transformational leadership competencies identified by (Dulewicz & Higgs, 2005). A key learning from the DBS Bank case is that digital transformation requires strong leadership. Hence, leadership is vital for a digital strategy to prevail.

Sawy, Kræmmergaard, Amsinck and Vinther (2016) stated that to allow for the integration of strategy, business models, IT functions, mindset and skills, the critical competencies of leaders in a digital business need to be fostered. Leaders need to constantly develop, learn and re-educate themselves in this digital era.

2.7 Conclusion

The literature review knowledge reflects that leadership is a critical aspect that is required to lead the 4IR in the banking industry. Leadership influences the performance of the organisation. Studies have found that EQ is a significant contributor to the success of the organisation. Managerial and intellectual competence is occasionally correlated to the success of a leader within an organisation (Dulewicz & Higgs, 2005).

The evolution of the banking industry, shifting from the traditional model to the digital transformation, provided an indication of the competencies required by leaders in the industry. Evidence was presented that the banking industry will be impacted by the 4IR and digital transformation, therefore it is imperative that leaders embrace the competencies required for leadership.

The study also identified that there is limited literature in terms of banks shifting from a traditional model to a digital transformation model. (Loonam et al., 2018) supports the assertion by stating that recent academia provides guidance on certain aspects of digital transformation.

The study identified the critical leadership competencies that are required to lead a digital transformation strategy. Further, the study discussed each competency that was identified by Dulewicz and Higgs (2005). With this context, the data collection and analysis that will occur in the forthcoming chapters will map keywords highlighted by leaders to the competencies identified by Dulewicz and Higgs (2005).

Chapter 3: Research Questions

3.1 Introduction

The research aims to understand the competencies that are required by leaders within the banking industry since the advent of the Fourth Industrial Revolution (4IR). There are large volumes of literature on leadership competencies and a myriad of perspectives from various scholars, however very little literature exists on the competencies of leaders required for digitisation and in the context of banking (Loonam et al., 2018). The research questions were informed by the literature review.

3.2 Research Question One

From an employee perspective, what is the impact of the 4IR on the South African banking sector?

Digital transformation allows for banks to leverage technology to service its current customer base in a more effective manner and to enter new markets (Parameswar et al., 2017). The traditional banking model allowed for a great propensity of face-to-face meetings (Quinton & Simkin, 2017), whereas the shift to a digital banking strategy now means that employees need to engage and maintain relationships with customers via a digital service platform (Sebastian et al., 2017).

The integration of a digital platform is a challenge that is being experienced by all organisations (Hess et al., 2016). Integrating new technology is reflective of the organsiation's approach to the 4IR (Hess et al., 2016). The integration of new technology also requires a higher calibre of skilled workers to exploit the new digital technology (Hess et al., 2016).

Sawy et al. (2016) postulate that the integration of a digital strategy, IT functions,and upskilling of employees, needs to be fostered and excuted by leaders in the organisations. During the transition to a digital transformation strategy a culture of resilence, adapatablility and also embracing failure needs to be employed by leaders and their followers (Sia & Soh, 2016).

The questions below were presented to the interviewees that participated in the research.

a) How has the transition to the 4IR been received in your organisation across all organisation layers?
b) What have been the notable challenges faced by your organisation in transitioning to the 4IR?
c) How have these challenges been resolved by the senior leaders in the organisation?

3.3 Research Question Two

What new skills (competencies) are required of senior leaders in the South African banking sector in response to the 4IR and what has been the impact on your department and organisation?

Previous studies show the competencies that are required of a leader (Dulewicz & Higgs, 2005). Loonam et al. (2018) state that theory on digital transformation is fragmented with only some aspects of digital transformation available to provide guidance. This narrative that is also reinforced by (Hess et al., 2016). At present we understand the competencies that all leaders require. However, we do not know or understand the competencies that leaders within the banking industry require?

The questions below were presented to the interviewees that participated in the research.

d) Describe the new skills required to lead the 4IR in your organisation and how were these identified?
e) What has been the organisational response (across all layers) to the deployment of these new skills?
f) Based on the deployment of these skills has there been a notable impact on bottom-line performance in your organisation?

These research and sub- questions were derived through the evalution of literature on the leadership competencies and will allow for the understanding of the critical competencies that are required by leaders in the South Afrincan banking industry since the advent of the 4IR.

Chapter 4: Methodology and Design

4.1 Introduction

This chapter discusses the research methodology and design for the study. This is a road map that is employed by the researcher to achieve the research objectives. The process involved identifying, developing and expressing the ideas formulated through the research process. Certain methods were employed by the researcher to gather information that would address specific research problems (Saunders & Lewis, 2012). Following from this the research onion was developed which illustrates the stages that should be conducted in a disciplined manner (Saunders, 2007).

Many assumptions were made that influenced the nature of the study that apper to be ontological in nature. Ontological assumptions seek to establish the nature of the reality (Ahmed, 2008). For purposes of this study the objective is to determine how leadership has evolved since the advent of the Fourth Industrial Revolution (4IR) and, more specifically, what new competencies leaders have adopted in this digital age.

The next layer with regards to the research onion is the research philosophy that was adopted. Saunders (2007) refers to research philosophy as a system of beliefs and assumptions about the development and nature of knowledge. The objective of the study was to develop knowledge of the leadership competencies that are required following the advent of the 4IR in the South African banking sector. The research philosophy adopted for this study is interpretivism. Interpretive studies aim to create a richer understanding of the social world and contexts of a certain subject matter (Sahay, 2016). The nature of the study was to identify competencies that leaders have adopted during the 4IR. Therefore, data was collected through an interview process.

An inductive research approach was employed as it involves the observation of patterns and recurring phenomena to develop propositions for investigation. Inductive research begins with a research question followed by the collection of data which is then used to generate theory (Saunders, 2009). Inductive research applies to this study because the collection of data from individual participants is raw data which has to be analysed and thereafter summarise. The summarised data prepared by the researcher aims to establish clear links to the research objectives and

thereafter develop a model/theory that could be adopted by other industries (Thomas, 2006).

4.2 Methodology Choice

The methodology that was adopted for this study is a qualitative exploratory approach that assesses how leadership since the emergence of the fourth industrial revolution (4IR) has evolved within the South African banking industry. The South African banking industry was used for this study due to the researcher's network and concomitant access to senior leaders within the banking industry. It is anticipated that the findings of this study may be sufficiently generalised to serve as a proxy for other industries. However, this assumption will need to be tested by future researchers.

This latter point is the driving factor for the exploratory nature of this study, as the aim is to determine the various leadership competencies that have been employed by senior leaders within the banking industry, and how the 4IR has been embraced within their environment.

The literature on 4IR-related topics and themes is large, complex and includes both qualitative and quantitative works, editorial commentaries and theoretical work, case studies, sociological and economics papers. The nature of the research problem (leadership competencies adopted since the advent of the 4IR) logically leads to an exploratory research paradigm, as stated earlier.

Exploratory research is about understanding a topic that is not well known to the researcher. Nevertheless, this was insightful for the researcher to improve their knowledge area and may allow of future research to be conducted (Saunders & Lewis, 2012). Conducting exploratory research for this study involved assessing academic literature and semi-structured interviews with senior leaders within the South African banking industry.

The methodological choice adopted for the study is a mono-methodological study using one method for data collection, qualitative or quantitative (Azorín & Cameron, 2010). The explanatory nature of the study lends itself to a qualitative approach. Qualitative research aims to understand why and how specific actions are taken by actors (Saunders & Lewis, 2012). A qualitative approach was selected to understand the evolution of leadership (actors) since the advent of the 4IR in the banking industry.

4.3 Population

The study aims to gain an understanding regarding the evolution of leadership competencies that are required since the advent of the 4IR within the South African banking industry.

The banking sector is being challenged and is shifting to a more agile approach with its operations (Kumbirai & Webb, 2010; Ifeacho, Campus & Africa, 2014). Leaders need to be more organic, resilient, responsive and adaptable since the advent of the 4IR (Schwab, 2016). Assessing how these banks are responding from a leadership perspective will provide insight into how leadership is changing and indicate the competencies that may be adopted by other industries.

Leadership plays a vital role in any organisation. A leader not only develops the vision of an organisation but executes what was envisioned (Abdulridha & Hussein, 2017). It is the responsibility of a leader to unite, support and encourage the team. This motivates them to achieve their goals (Abdulridha & Hussein, 2017). For this reason, individuals at the senior level are considered to be the optimal target population for this study.

The target population identified was relevant to the study as participants in this population have the leadership experience and have been mandated by their respective organisations to embrace and lead the 4IR within their departments.

Interviewing leaders at the new digital banks provided an alternate perspective of leadership competencies that could be incorporated at the traditional banks. Traditional banks in South Africa are subjected to various challenges including those of increased competition and increased costs due to high regulatory requirements and technological challenges due to the reliance on legacy systems (Kumbirai & Webb, 2010).

4.4 Unit of Analysis

The unit of analysis are senior leaders who are employed within the South African banking industry and certain non-traditional competitors. Interviews across several organisations provided a representation of the challenges that may be experienced and provided an indication of the leadership traits required for the 4IR.

4.5 Sampling Method and Size

The qualitative nature of the study added complexity with regards to the time and analysis of the data that is required. The researcher was required to gain an in-depth understanding of the subject and identify an applicable theory concerning the topic (Saunders & Lewis, 2012). Hence, a review of the requirements for leading an organisation in the 4IR within the South African banking industry was done.

The population target identified are senior leaders within the South African banking industry. The sampling method applied to the study is a judgemental sampling process that is augmented by snowball technique (Taherdoost, 2016). A judgemental sampling process was employed by the researcher to ensure that the correct participants were identified for the chosen study.

Snowball sampling assumes that interviewees of the same target population known to each other (or know one another) (Burger & Silima, 2016). For purposes of the study, participants were requested to provide recommendations of prospective candidates either within their organisation or outside their organisation.

To further ensure that the correct participants are identified, a screening process of the interviewees based on internet research was done to ensure suitability for the study. Due to the time constraints of the study existing networks both in academia and professionals in the banking sector were considered to compile the list of interviewees. The table below represents potential candidates to participate in this study:

Table 1: Description of Sample

Organisation	Designation	Prefix	Department
Bank A	Senior Manager	B - A1	CIB Data Analytics
	Senior Manager	B - A2	CIB Data Analytics
	Senior Manager	B - A3	Service Engineering
Bank B	C Level Executive	B - B1	Emerging Payments
	Senior Manager	B - B2	Home loans
Bank C	Head of Department	B - C1	Compliance Office
Bank D	Senior Manager	B - D1	Business Banking
	Senior Manager	B - D2	Self Service Devices
Bank E	C Level Executive	B - E1	Digital Banking
Bank DB	C Level Executive	DB - 1	Group CIO

4.6 Measurement Instrument

The preferred measurement instrument for this research was semi-structured interviews. Ryan, Coughlan and Cronin (2014) states that interviews are used as a qualitative research tool to gather information about the interviewee's experiences and beliefs on the given topic. The objective of the research was to ascertain how leadership practices and competencies have evolved in response to the advent of 4IR within respondents' organisations.

The researcher gained a understanding of the topic in preparation for the interviews through the literature review (Adams, 2015). For research purposes, identical questions were presented to all interviewees. This will allow for the inputs provided by the interviewees to be analysed in consistant manner. Thereafter, the researcher identified a common theme that emerged amongst the various individuals (Fusch & Ness, 2015). The following questions formed part of the interview schedule:

Table 2: Research Questions

No.	Research Question	Research Sub-questions (Interview Schedule)
1	From an employee perspective, what is the impact of the 4IR on the South African banking sector?	a) How has the transition to the 4IR been received in your organisation across all organisational layers? b) What have been the notable challenges faced by your organisation in transitioning to the 4IR? c) How have these challenges been resolved by the senior leaders in the organisation?
2	What new skills (competencies) are required of senior leaders in the South African banking sector in response to the 4IR and what has been the impact on your department and organisation?	d) Describe the new skills required to lead the 4IR in your organisation and how were these identified? e) What has been the organisational response (across all layers) to the deployment of these new skills? f) Based on the deployment of these skills has there been a notable impact on bottom-line performance in your organisation?

Fusch and Ness (2015) postulated that data triangulation is a means by which multiple sources are used. Data triangulation is a method to achieve data saturation whereby data is verified in different data sources or research methods, adding credibility to the findings.

4.7 Data Gathering Process

A series of face-to-face interviews was undertaken by the researcher to gather the required data. The research questions provided to all interviewees in advance to allow for adequate preparation on their part. The nature of the study and key constructs identified was also communicated to aid their preparation.The interview questions were presented to the participant beforehand to ensure that there was consistently when the instrument was repeatedly administered.

All interviews were be recorded (with the permission of the interviewee) and transcribed into text for analysis. This allowed the information to be verified during the research report and ensure that there was a required audit trail for the research report.

The researcher remained objective during the interviews, therefore, field notes were also taken to supplement the transcripts. This ensured that any bias by the researcher was recorded and accounted for. Confidentiality was offered to all participants in line with ethical conduct.

4.7 Analysis Approach

The interview recordings were transcribed verbatim into text by the researcher. All identifying information that is associated explicitly with an organisation will be removed from the transcripts.

To assist with the analysis of transcripts a software management tool (Atlas.ti) that is designed for qualitative analysis was used. The tool arranged the information in a systematic manner for analysis. Data coding was done on this tool for ease of analysis by the researcher.

According to Sutton and Austin (2015) data coding is a means of identifying similarities of topics mentioned by the interviewees. The objective of the process was to enable the researcher to understand the common themes that occured between the different interviewees. Once the theme emerged the researcher was able to check the validity of the theme against the research questions.

Thanh and Thanh (2015) stated that interpretive researchers do not seek answers to their studies in a rigid means. Their approach is based on the experiences of the individual or group that is being interviewed.

4.8 Limitations

The explorative, cross-sectional and inductive approach that has been applied to this study forms part of the limitations. The in-depth nature of the study is hard to replicate (Myres, 2018). Further to this, the snowballing technique that was proposed limits the validations of the broader population (Saunders & Lewis, 2012).

There is also a concern that data saturation was not achieved, thereby impacting the quality of the research (Fusch & Ness, 2015). This may be due to the stipulated interview quota (15-20 interviews) not being achieved, or a common theme not emerging (Fusch & Ness, 2015).

The inexperience of the researcher in likelihood limited the study during the data collection stages. This may have resulted in vital information being omitted thereby translating into a less than adequate analysis than is required for the nature of this research.

Chapter 5: Results

5.1 Introduction

This chapter presents the results of the research questions in Chapter 3. The results based on the findings from the analysis of data collected during the face-to-face interviews that were held by the researcher. The same set of questions was presented to all interviewees to ensure consistency. The researcher was then was able to identify common themes.

The section begins with the details of the interviewed participants, which provides information towards a better understanding of the background and context of the interview conducted — followed by qualitative analysis of the results of each research question and the interview schedule where key themes that have emerged from the interviewees' responses identified.

5.2 Description of Sample

In total, ten interviews were held with leaders in the South African banking industry for this study. A list of respondents and their associated organisation and designation indicated in table 1, Chapter 4. The names of both the organisation and individuals are omitted in the interests of confidentiality. Without such precautions, the seniority of the respondent could make their contribution to this study readily traceable. However, it should be noted that the data sample was drawn from the so-called "Big Five" banks in South Africa, with a single representative from one of the newer "Digital Bank" to supplant the established players through technological innovation and leadership.

The judgemental sampling process employed by the researcher ensured that the correct participants were involved in the study. The individuals that participated in the study are perceived as having the necessary knowledge and experience, given their positions within their organisations and leadership experience.

The sample consisted of five males and five females, all of whom hold either Executive, Senior Manager or Manager positions within their respective organisations and have direct involvement in digital projects that are transforming the bank.

The interviews were conducted face-to-face in boardrooms except for five, two of which were held at a coffee shop and two were held at the researcher's business school due to the availability and the preference of the interviewees. The interviews were held in a secluded area with no distractions. The remaining interview was held at the participant's premises due to the participant being on maternity leave. The interviews were conducted face-to-face in a boardrooms except for five, two of which were held at a coffee shop and two were held at the researcher’s business school due to the availability and the preference of the interviewees. The interviews were held in a secluded area with no distractions. The remaining interview was held at the participant's premises due to the participant being on maternity leave.

5.2.1 Description and Details of Participants

A total of ten interviews were held for this study, three participants from Bank A, two from Bank B and D and finally one participant each from Bank C, E and DB. Only one interview with a participant was obtained at each of these organisations (Bank C, E and DB) due to the reluctance of the bank to participate in the study, and the participants' availability in terms of time.

The participants interviewed are all involved in a digital project within their respective organisations. These projects range from improvements to existing legacy systems, automation of processes, big data analysis and new offerings on digital platforms.

5.2.2 Research Codes

The data was collected by employing the research methodology outlined in Chapter 4. The data coding is represented as the list of competencies identified by Dulewicz and Higgs (2005). The researcher attempted to map the data codes as carefully as possible to the Dulewicz and Higgs (2005) leadership competencies. Based on the data, there are direct matches to Dulewicz and Higgs' (2005) list and new codes created based on the data analysis.

A total of ten interviews were held with leaders from traditional banks and a new digital bank. All participants are involved in significant projects that contribute to the

transitioning required by 4IR. Through the interview process, the development of codes was tracked.

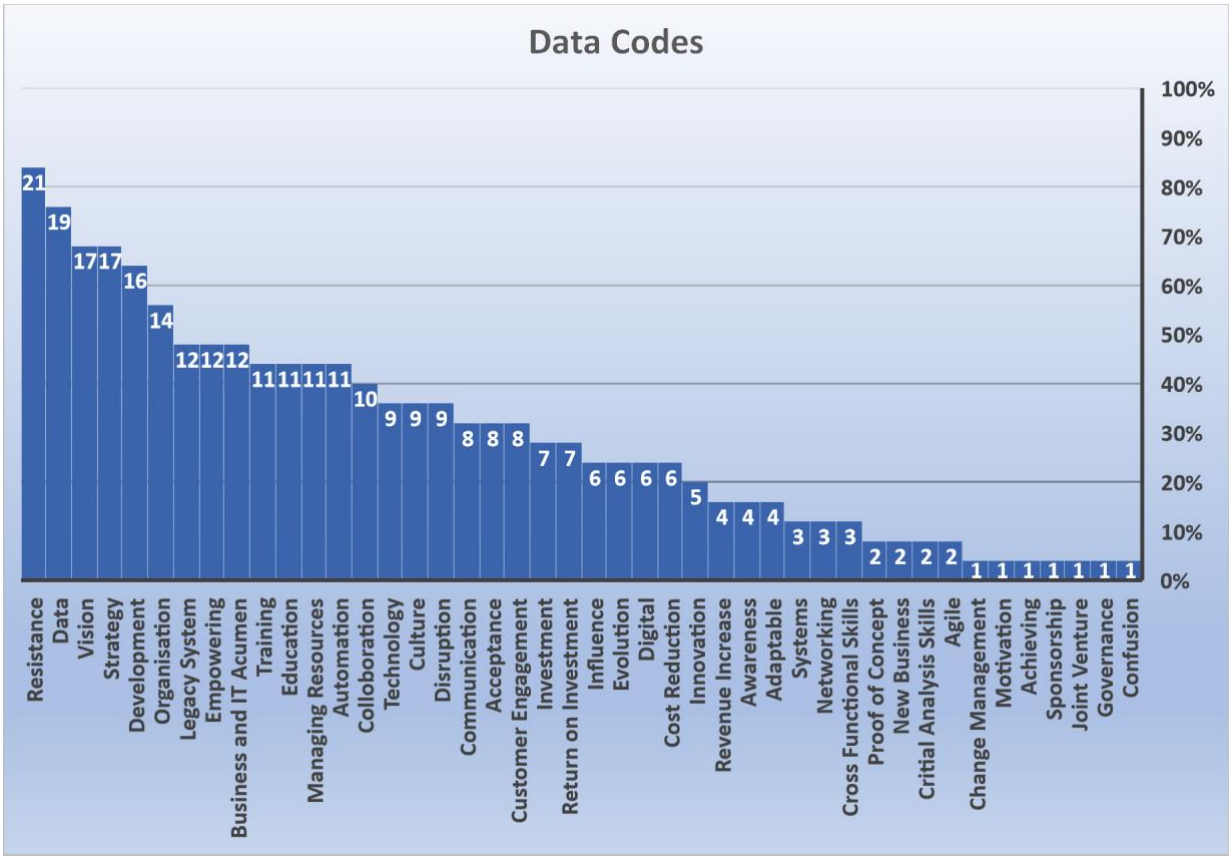

Figure 7: Codes developed through the interview process

Figure 7 depicts the codes developed through the transcribing and analysis process. Once each interview was transcribed, the researcher then compared the transcription to the handwritten notes that were taken during the interview. This was done to aid the researcher in assigning the data codes. Thereafter, each transcription was uploaded into a computer-assisted qualitative data analysis software programme, Atlas.ti.

Based on the analysis of the codes that were processed through Atlas.ti, the above histogram was derived. A total of 44 codes were derived through a deductive, top-down approach. A fair majority of the codes correspond to Dulewicz and Higgs' (2005) list.

It is essential to note the new code, namely, Business and IT Acumen, Education, Training and Resistance were created based on the analysis of data. These codes were frequently mentioned by the interviewees and therefore impacted the results of the study.

5.3 Presentation of Results

The data was collected by executing the research methodology outlined in Chapter 4. The results are presented as per the themes obtained through the data and in conjunction with the corresponding interview questions mapped to each research question as indicated in Chapter 3.

Names of all participants and their associated organisations were changed to pseudonyms in Table 1 to protect their identities as promised during the interview introduction.

Bank, Participant and quote numbers were used to identify the quotes used in this section using rounded brackets, with the prefix “B” and “A” to “E” to indicate the bank and a numerical value to indicate the participant from the bank. The digital bank will be identified as “DB – 1”. A complete list of identifiers is provided in the table below:

Table 3: Participant Identifiers

Organisation	Designation	Prefix
Bank A	Senior Manager	B - A1
Bank A	Data Science Manager	B - A2
Bank A	Senior Manager	B - A3
Bank B	C Level Executive	B - B1
Bank B	C Level Executive	B - B2
Bank C	Senior Manager	B - C1
Bank D	Senior Manager	B - D1
Bank D	Senior Manager	B - D2

Organisation	Designation	Prefix
Bank E	C Level Executive	B - E1
Bank DB	C Level Executive	DB - 1

5.4 Interview Questions

The first three sub-questions framed the discussion around the context of the Fourth Industrial Revolution (4IR) and were respectively aimed at obtaining a view of the impact the 4IR has had on the South African banking industry. The second set of sub-questions aimed to identify the leadership competencies that are required of a leader in the 4IR in the banking industry.

5.4.1 Research Question One

From an employee perspective, what is the impact of the 4IR on the South African banking sector?

The purpose of this question was to understand the impact of the 4IR within the South African banking industry. The 4IR is a broad and complex subject. Therefore, it was necessary to frame the discussion around the context of 4IR and obtain a view of what the individuals perceived 4IR in the banking industry to be.

All interviewees expressed their views on the 4IR, and there were many consistencies in their articulation of the concept. However, there were also a few unique insights expressed based on the individuals' experience and their associated organisation.

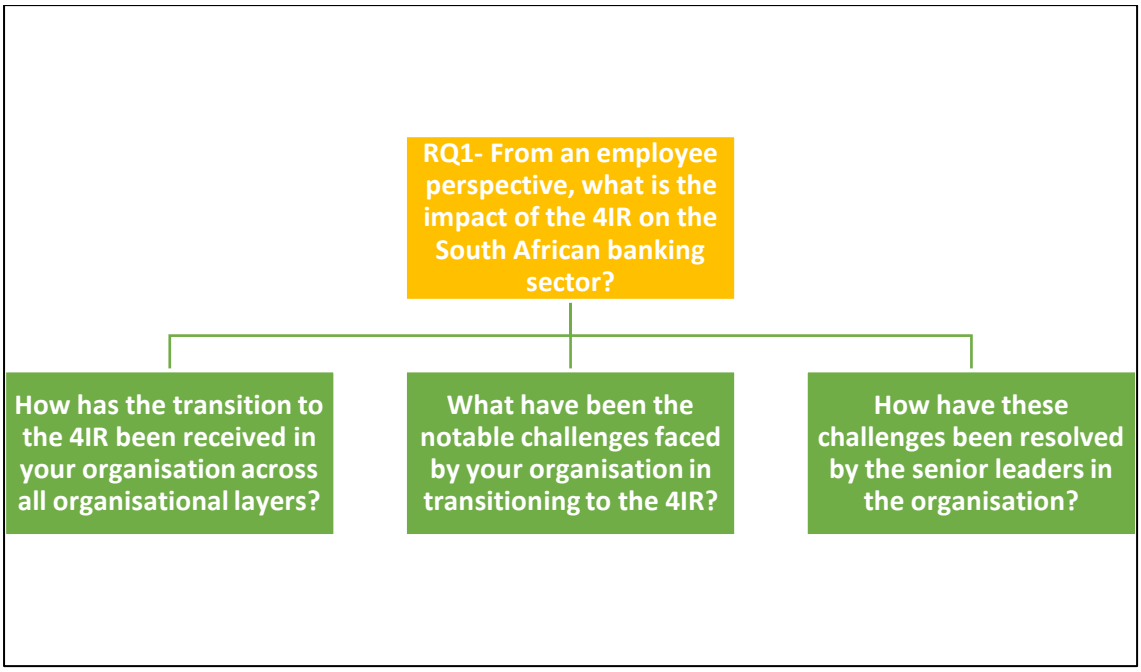

Figure 8: Research question one and related interview questions

Figure 8 depicts research question one and the corresponding interview questions. Based on the data collected through the interview process, the codes that emerged with a high frequency are Resistance, Education and Vision. These codes are discussed further in the interview questions below.

5.4.1.1 Interview Question A

How has the transition to the 4IR been received in your organisation across all organisation layers?

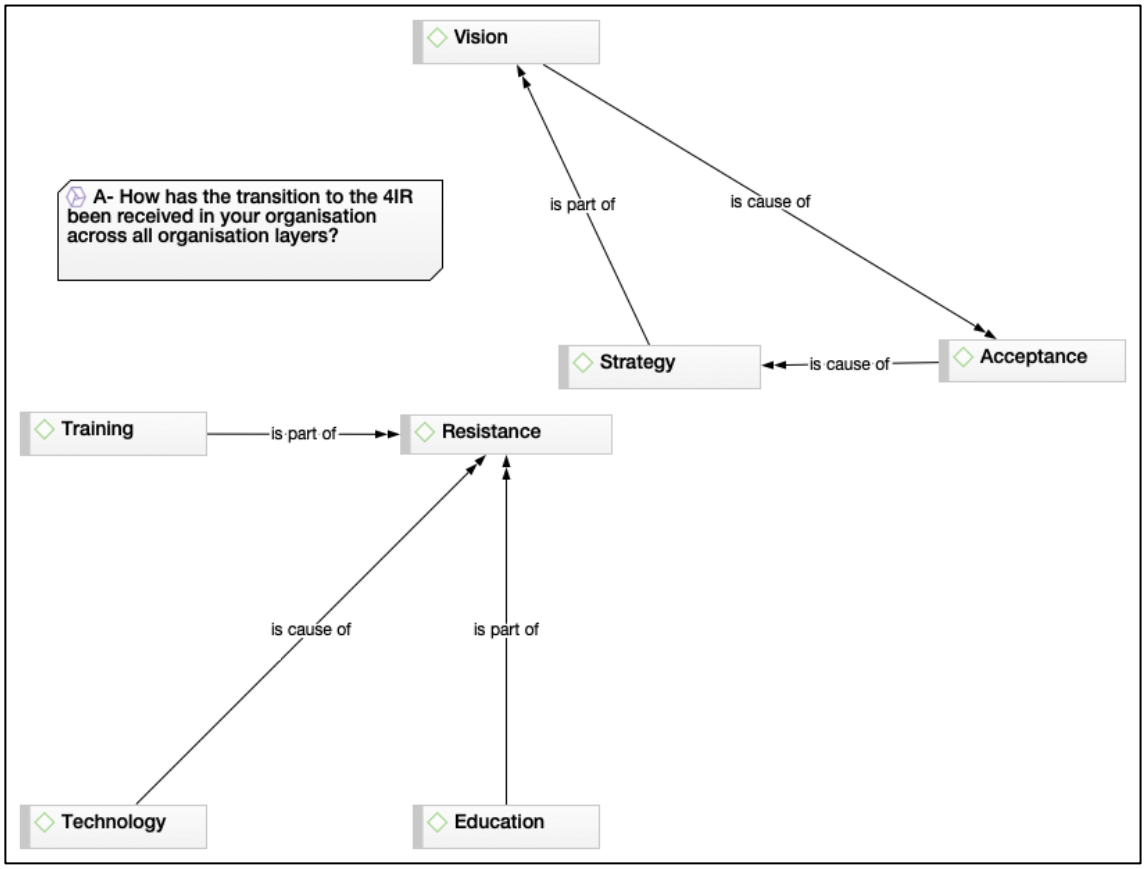

Figure 9: Transition to the 4IR

The principal codes that emerged with regards to the transition to the 4IR are Strategy, Acceptance, Vision, Resistance, Training, Technology and Education. Figure 9 depicts these principal codes of Strategy and Resistance, and in addition, the sub-codes are linked to the principal codes. Based on the data collected, there is a link between the sub-code of Acceptance to the 4IR due to the strategy of the organisation. The strategy of the organisation forms part of the vision of the senior leadership team. Linked to the main code of resistance are three sub-codes, namely, Training, Education and Technology.

All participants stated that the strategy of their organisation was to integrate more technology, automation and new ways of work. The majority of the participants also expressed their desire to improve their products and services by incorporating more digital offerings for their customers. It was expressed by (B-E1) that their organisation

embarked on a strategy that would improve their digital offerings as well as their internal processes. All the participants from (B-A1, A2 and A3) confirmed that their organisations are embarking on a strategy that aims to improve their internal capabilities and digital offerings. However, all the participants from (B-A1, A2 and A3) mentioned that their organisation had to revise the original strategy due to resistance to change, or significant investments that had been made with minimal return. This indicates that Bank A is in the investment phase of the 4IR. The view expressed by (B-C1) is that their organisation is still in the investment phase of the 4IR and that the strategy of the organisation is to improve internal capabilities, automate manual processes and improve the digital offerings in terms of products and services for customers.

The majority of the participants articulated that acceptance to the 4IR was dependent on the department in the organisation. The majority of the participants expressed the view that their Information Technology (IT) departments were the first to accept those technologies and new ways of work introduced by the 4IR. A view expressed by (B-D1) states that IT departments are more aware of technological changes and advancements compared to finance departments.

The majority of the participants were of the opinion that the strategy of the organisation had been accepted due to the vision of senior leadership. The majority of individuals felt that the vision of the leadership to change and improve the internal capabilities of the organisation contributed to the acceptance of the 4IR in their organisation. The view expressed by the participant (DB-1) was that the transition of the 4IR was achieved due to the vision of the senior leadership team. This view is also mentioned (B-D1), who states that transition to the 4IR, introducing new technologies and new ways of work is due to the vision of the senior leadership team.

The data indicates that there is acceptance of the 4IR at Executive and Senior management level. A view expressed from (B-B1) was that strategy to embark on a digital transformation journey had been in progress of the last three years and that this digital transformation journey was initiated by the executive team of the organisation. The data indicate that the influence of the executive and senior management is crucial to the transition of the 4IR. However, the majority of the participants expressed the opinion that at the lower levels of the organisation, there is resistance to the 4IR.

Resistance to the 4IR as indicated by the data collected is being experienced by the traditional banks, Bank A – E, due to the fear of roles becoming redundant, lack of education on the 4IR and lack of training on the new technologies.

The view expressed by (B-B1) indicates "The transition to the fourth industrial revolution has not been received well in parts of the organisation due to people being affected in their roles". This is a narrative that is supported by (B-C1) who states, "There is much fear about the 4IR as you progress down the organisation". The resistance to change and fear was also expressed by (B-E1) where fear amongst individuals in the lower layers of the organisation was raised as a concern as a result of roles in the organisation becoming redundant. The resistance to the 4IR was also supported by (B-A3) who mentioned that in their department, the transition to the 4IR was received with confusion and panic due to the fear of their roles becoming redundant.

Linked to the resistance to change is lack of education and training available in the organisation that is required for the 4IR. The majority of the participants from the traditional banks held this view. Further to this, the majority of the participants also noted that failing to change the mindset of individuals who had been in the organisation for over twenty years also contributed to the resistance to change. It was expressed by (B-A3) that "We have people in the organisation who are comfortable with the traditional way of working, they are embedded in governance, structure and process, but with the new ways of work they have been asked to do things differently, and it has proved a challenge". This narrative is also supported by (B-D1) who states that "As humans, we get into a routine that if something worked in the past, it is instinctive to continue working that way".

Based on the data collected, the majority of the participants indicated that the transition to the 4IR was met with acceptance by the executives and senior management teams in the organisation, primarily due to the strategy and vision of the executive team. Resistance to the 4IR was expressed by the majority of the participants as coming from the lower levels of the organisation due to fear of their jobs becoming redundant.

5.4.1.2 Interview Question B

What have been the notable challenges faced by your organisation in transitioning to the 4IR?

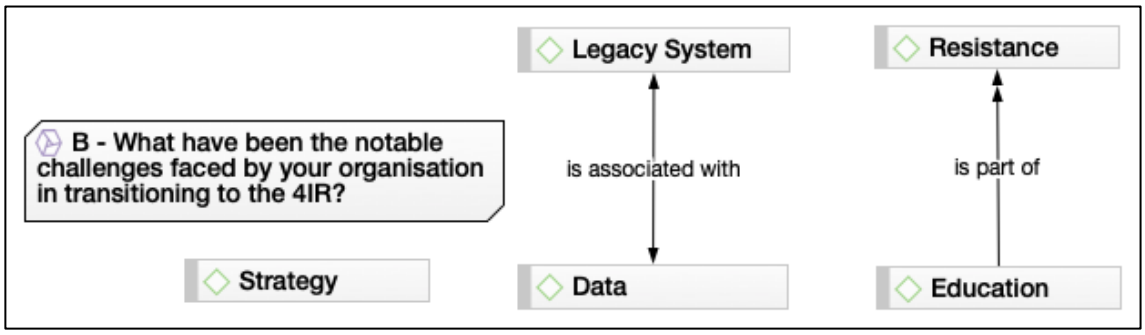

Figure 10: Challenges of the 4IR

The principal codes that emerged with regards to the challenges faced by organisations transitioning to the 4IR were the strategies of the organisation, resistance, education, data and the dependence on legacy systems. These keys themes were expressed by all participants. Even Bank DB, which is a digital bank, stated facing challenges associated with data and the education of individuals as required for the 4IR.

The views expressed from participants in Banks A-C believe that the execution of the strategy envisioned by the executive team in their respective banks has been a challenge. All the participants from these organisations noted that the executive team embarked upon a strategy that would incorporate more digital capabilities to improve internal processes and customer offerings. However, all the participants have noted adversity in the execution of this strategy. The views expressed by (B-A1) state that part of the strategy that was envisioned by the executive team was to establish a central data team to improve and integrate the quality of data collected from divisions such as retail banking, vehicle asset finance and corporate investment banking. However, after three years of continuous investment into a central data team, the team was dissolved. The reason for dissolving the team was due to a lack of return on investment. The team would produce pilot projects for the different departments, but due to lack of funding, the departments would not commission the projects. The participants (B-A2 and B-A3) concur with (B-A1) that the strategy of the organisation needs to be revised.

Participants from Bank B (B-B1 and B-B2) both indicated that the strategy of their organisation was envisioned three years ago. However, the execution of the strategy has been a challenge for various departments in the organisation. Both participants (B-B1 and B-B2) indicated that executives and senior leaders misunderstood the culture of the organisation and its customers. From an internal perspective, (B-B2) expressed the opinion that the engagement process with employees when executing the digital strategy could have been better communicated. The view expressed by the participant (B-B1) was that some of the digital offerings are not aligned the needs to the of the customer, for example, attempting to bank the unbanked individuals in South Africa. The opinion expressed by (B-B1) is that these individuals prefer to operate their business without a banking facility.

The views expressed from Banks D – DB differs from that of Banks A – C with regards to challenges experienced in the execution of strategy. Both the participants from Bank D (B-D1 and B-D2) indicated that the strategy of digital transformation had mainly been accepted in the organisation, especially in the IT departments. The strategy of digital transformation was embarked upon twelve to fifteen years ago (B-D1). Within the digital departments of the organisation, the strategy has been accepted (B-D2). The participant from (B-E1) expressed the view that the strategy was accepted in the organisation with ease due to the establishment of a new digital department. The participant from (DB-1) said that the strategy of digital transformation has always been central to the organisation. The data collected indicates that the execution of strategy has been a difficulty for traditional banks. However, that successful execution of strategy is achievable as indicated by Banks D-DB. However, except for Bank DB, all the participants from Banks A-E indicated that resistance to change is a notable challenge.

Resistance to the 4IR was expressed as a contest due to employees not fully comprehending the impact of the 4IR within their organisation, or the direct impact on their roles in the organisation. The view expressed by (B-B1) states that in their organisation "The transition to the fourth industrial revolution has not been received well in parts of the organisation due to people being affected in their individual capacity". Hence, this has been a complication for the organisation to transform digitally. This narrative is also supported by (B-E1) who states "Much resistance to the 4IR within the organisation was experienced" indicating that this has presented obstacles. Based on the data collected indications are that resistance to the 4IR is being experienced at the lower levels of the organisation. The views expressed by

the majority of the participants is that individuals in the lower levels are concerned primarily about their roles in the organisation due to the automation of the process such as regulatory reporting and pricing models. (B-D1) Stated that in the transition to the 4IR, resistance to change has been a key contributing factor. The greatest challenge for an individual has been to overcome the belief that the new technology being introduced will not necessarily make roles redundant, resulting in these individuals not having embraced the 4IR and the new technology. The majority of the participants indicated that educational level was linked directly to the resistance to change.

Due to technological advancement and the impact which it has, employees need to re-educate themselves. The focus on education ranged from understanding the 4IR and the impact that it will have on the industry, to learning a new skill that will make an employee essential to their organisation. A view expressed by (B-E1) states that “Across the organisation from the executive team to team leads, leaders have to re-educate themselves in terms of the fourth industrial revolution and the technology being introduced”. The majority of the participants from Banks A – D expressed the opinion that current re-education being offered to employees in the lower levels of the bank was insufficient. The majority of the participants from Bank A – D concurred that this lack of adequate education contributes significantly to the resistance to change.

Another factor identified by all the participants was the dependence on the internal legacy systems. These systems are an integral part of the organisation and contain a lot of vital data, but are costly to maintain. The technology that is being introduced through the 4IR means that these legacy systems are no longer required. Transitioning away from these systems has been a challenge for the traditional bank that participated in this study. A participant from a traditional bank, (B-A3) said: "The biggest challenge was the capability of the legacy system to integrate with the current requirements of the new systems". This notion is also supported by (B-D1) who stated that "Adopting new technology that will benefit the organisation is difficult due to the dependence on the legacy systems". A similar view expressed by (B-D2) states that legacy systems are a significant challenge for the organisation. Being able to transform data in real-time, process large volumes of data and allow for system integration, has been a challenge due to legacy systems.

Integrating new technology that is available through the 4IR is especially challenging for the organisation which is dependent on a mainframe system. Being dependent on a mainframe system impacts the data that is available in the organisation. This is a view expressed by (B-A1) who states that a significant challenge of their organisation is able to source data. Having over 2000 unique systems that contain data, the challenge that exists is transferring this data onto a stable, single platform.

5.4.1.3 Interview Question C

How have these challenges been resolved by the senior leaders in the organisation?

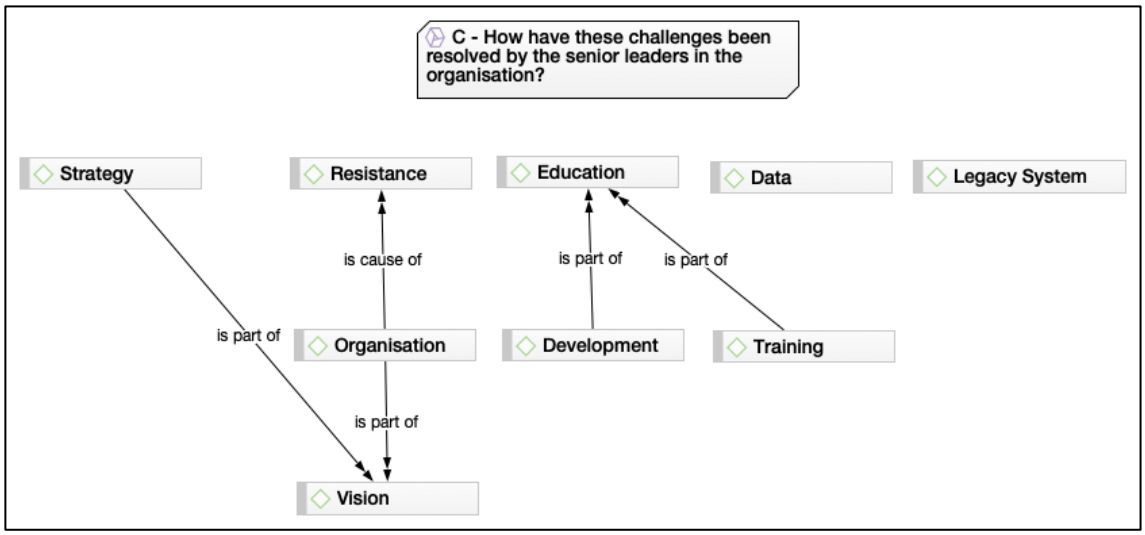

Figure 11: Resolution to challenges

As stated in the previous question (Chapter 5.4.1.2) the challenges that are being experienced by organisations in the transition to the 4IR include strategy, resistance to change, education, data and the dependency on legacy systems. Interviewees from all organisations that participated in this study indicated that their respective leadership teams are being proactive and addressing the issues highlighted.

The views expressed by all the participants from Banks A – E is that the executive and senior leaders in the organisation are attempting to resolve the issues highlighted to facilitate the execution of strategy. Participant (B-A1) stated that the executive and senior leadership team decided to dissolve the central data team and established a smaller team to focus on the business department. The business department now has the responsibility of integrating new technology and data

analytics with the support of the smaller data teams. From an organisational perspective, the smaller data team can influence a more substantial part of the organisation, thereby increasing their presence in the organisation. At Bank A, the organisation embarked upon an organisational restructure to resolve their challenges with strategy. An organisational restructure was also deployed at Bank E, as expressed by (B-E1). However, their restructuring was based on the redeployment of skills and the formation of a new digital team. A similar strategy occurred at Bank D, as expressed by (B-D1) who formed a digital team to improve their digital offerings. In addition to resolving the strategic issues that are being experienced, senior leaders in the organisations are also attempting to resolve the issue of resistance.

The participants from (B-A1, B-A2 and B-A3) indicated that the resistance to change is being resolved by the leadership team by the following means: Participants from (B-A1 and B-A3) Organisational restructuring. (B-A2) Noted that part of the organisational restructuring involved retrenching people who were resisting the new strategy and the new ways of work. In addition to the organisational skills development initiatives, the senior leadership themselves are instilling a culture of training and development. The view expressed by (B-A2) is that senior leaders are encouraging employees to learn new capabilities by enrolling on courses and using open-source software. The majority of the participants stated that the leaders in their organisations had introduced new education, training and development programmes. The (B-E1) participant stated that these programmes are designed to inform employees about the 4IR and improve the capabilities of individuals. This notion was also reinforced by (B-D2), who stated that education and training programmes introduced within their department had improved the technical skills of the team. Professionals such as accountants are learning technical skills such as computer programming. Learning a new skill has resulted in projects running more smoothly due to a better understanding of the technical requirements by the business department.

Further to overcoming the resistance to change, it was expressed by both participants from Bank D (B-D1 and D2), that the senior leadership team shared their vision for the organisation. This vision was shared by engaging employees through corporate open sessions and conferences, but the data collected from the participants (B-D1 and D2) indicates that the resistance to change is still being experienced in the organisations.

All the participants highlighted two critical issues with data, namely, the quality of data and the analysis of the data. All the organisations that participated in this study have large volumes of data, but the quality of the data varies from organisation to organisation. Participants from (B-A1 and A2) indicated that the leaders in their departments had established data teams with highly qualified individuals who specialise in mathematics, statistics and data science. Participants from (B-E1) and (DB-1) revealed that their organisations had established their data science labs many years ago. The establishment of these labs meant hiring qualified individuals, thus ensuring that individuals continued their education, training and development to improve their data analysis capabilities.

The traditional banks (Bank A – E) indicated that in order to improve the analysis of data in their organisations, training programmes are being introduced. These programmes are available through the organisation's internal training curriculum, and training and development form part of the employees' performance measures.

The final challenge that senior leaders are addressing in organisations is the dependence on legacy systems. The views expressed by the participants from Banks A – E is that this is a significant challenge for their respective organisations. All participants indicated that this is senior challenge leaders are struggling to address. Participants from (B-D1 and B-D2) stated that this issue is being addressed through visionary senior leaders who have developed strategies to integrate new technology while slowly decreasing the reliance on the legacy systems. However, both participants (B-D1 and B-D2) ventured that their organisation will always be dependent on the legacy to an extent. The views expressed by all the participants is that new, emerging technology can only be integrated along with the legacy systems.

Based on the data collected, there is an indication that the executive and senior leaders in the organisations that participated in this study are attempting to resolve the challenges that are being experienced. Leaders are addressing the issue of strategy through organisational restructures. The resistance to change is being addressed through education and training programmes, and finally, leaders are empowering staff to improve data analysis capabilities. Addressing the issue of legacy systems is being resolved by integrating new technologies and slowly reducing the reliance on the legacy systems.

5.4.2 Research Question Two

What new skills (competencies) are required of senior leaders in the South African banking sector in response to the 4IR and what has been the impact on your department and organisation?

The purpose of the question is to understand the importance of leadership and identify the competencies required of leaders in the banking industry following the advent of the 4IR.

All participants expressed views on the competencies that are required of a leader since the advent of the 4IR. Their views were based on what is currently being experienced in the organisation and improvements that can be made to manage the integration of the 4IR better.

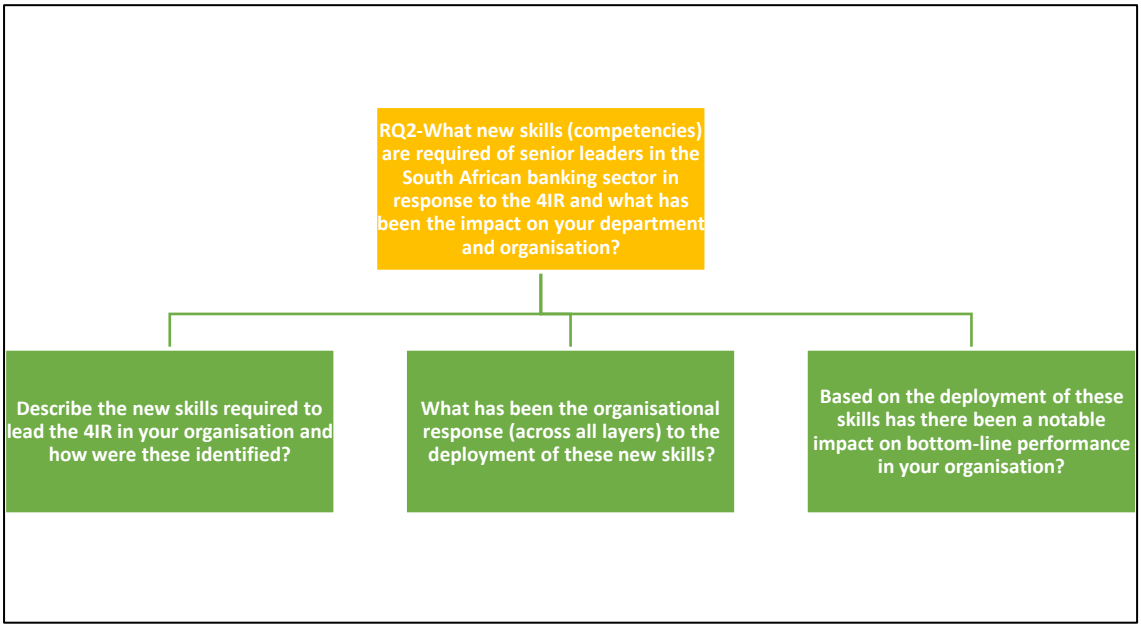

Figure 12: Research question two and related interview questions

Figure 12 depicts research question 2 and the interview questions that are linked to the main research question. Based on the data that was collected through the interview process, the codes that emerged with a high frequency are business and IT acumen, vision, empowerment, development and strategy. These codes are discussed further in the interview questions below.

5.4.2.1 Interview Question D

Describe the new skills required to lead the 4IR in your organisation and how were these identified?

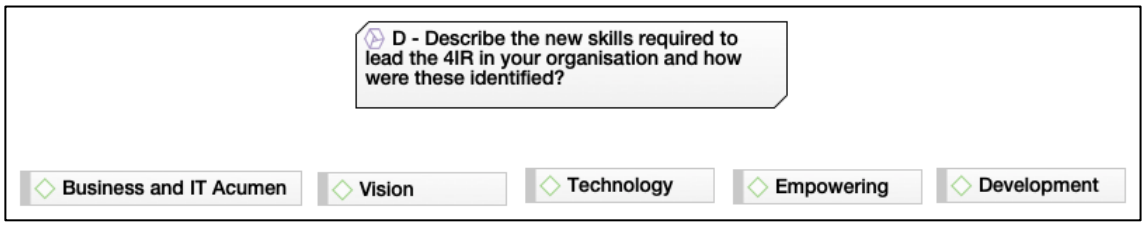

Figure 13: Skills required for the 4IR

Many participants indicated that the essential competencies required of a leader for the 4IR are a blend of Business and IT acumen, Vision, Technology, Empowerment and Development. These competencies were identified based on the data collected from the executive and senior leaders that are currently employed in the banking industry. Figure 7 depicts competencies that were coded by the researcher.

“Leaders require a blend of computer science, mathematics and science to solve the complex business problems that organisations are experiencing”. This was the view expressed by (B-A1) that leaders need computer programming skills, and need to be able to understand how a programme works. This understanding of how a programme works will guide decisions on how to improve the programme. The notion of a leader requiring a combination of business and technical skills was also supported by (B-E1) who states that the type of leader required for the 4IR needs to have a good understanding of technology, but also the traditional functional skills that are required to lead a business such as accounting.

The majority of the participants articulated the need for a leader in understanding technology. The participants expressed the view that a leader not only needs to understand the technology that is currently in place at the organisation, but also new technology that can be introduced. The participant (B-A3) concurred that "We need a lot more leaders to have technical understanding". "Technology can improve the capabilities of the organisation" (B-A2). This notion is further supported by (B-D1) who said: "I think that that there would be a lot more technical skills that are required of a leader in the 4IR".

Being visionary, or having a vision was something that all the participants stressed is a competency that is required of a leader in the 4IR, to both grow the business and identify new opportunities for the organisation. New technology and data that is available to the business need to be successfully integrated into the organisation. All participants articulated that their leaders have to set the objectives and goals and provide clear guidance in terms of how the organisation will achieve these objectives and goals. The vision of the organisation needs to be communicated from the C level executives of the organisation and executed by the leaders in the organisation (B-D1). The majority of the participants felt that leaders need to communicate how the vision of the organisation would be achieved. Employees often express excitement when first hearing about new technology to be introduced. However, this excitement subsides over time due to leaders not guiding them on how the new technology will be integrated into the organisation.

The majority of the participants articulated that leaders need to empower their employees to be able to take on a task that is not part of their regular duties, and then guides their employees once they have provided the opportunity to take on more responsibility. The participant from (B-E1) stated that in their organisation leaders provided an opportunity to their employees to perform new tasks, which allowed individuals to be involved in more value-creating activities in the organisation, contributing to improved bottom-line performance.

The majority of the participants also indicated that empowering employees can be achieved through training and development programmes that are of interest to the individual. These programmes also need to be aligned to the objectives of the organisation, to ensure that a successful contribution is made by the individual.

Development was highlighted as a competency that is required of a leader in the 4IR and needs to occur in two spectrums, both development of the leader to ensure that they are abreast of the developments occurring as a result of the 4IR, and development of the employees. Leaders need to continually improve themselves by identifying new technologies that can be introduced into the organisation and in the new ways of work that have come about as a result of the 4IR. They need to be aware of the new contemporary project management methods that have been introduced in several of the organisations that participated in this study. Building on this, leaders also need to be aware of the importance of collaboration within their teams and with other teams in the organisation. Allowing individuals and teams to

collaborate may result in an increased pace of work which will ultimately improve the efficiency of the organisation.

Based on the data collected the critical competencies of a leader required for the 4IR includes a combination of business and IT skills, and leaders need to have an excellent technical understanding. They need to understand the current and future technology that can be incorporated into their organisation., and they need to empower themselves and those around them to ensure that the vision of theirs and that of the organisation is achieved.

5.4.2.2 Interview Question E

What has been the organisational response (across all layers) to the deployment of these new skills?

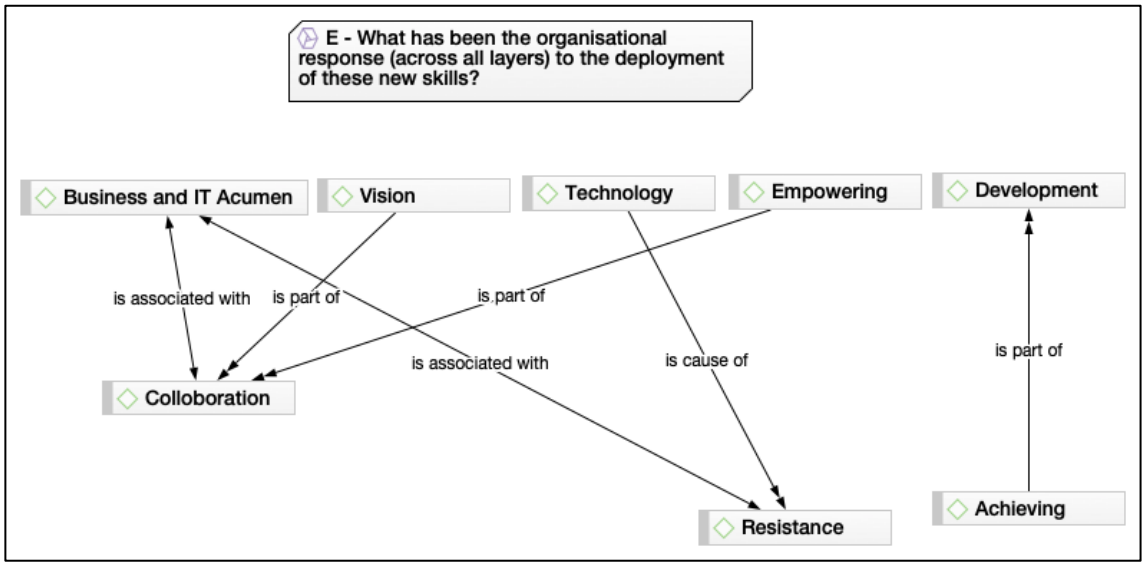

Figure 14: Response to the deployment of skills

As stated in the questions, the skills identified for a leader in the 4IR include business and IT acumen, vision, a good understanding of technology, empowering themselves and those around them and development. Assessing the competencies identified and the response to those competencies is discussed further.

The participant from (B-A1) notes that the organisation is collaborating with prominent universities in South Africa to identify graduates who are enrolled in courses that have a mixture of mathematics, statistics and business subjects. These graduates are offered roles in the organisations, specifically in the data teams.

Participants from (B-D1) and (B-E1) expressed a similar endeavour, with the organisation mandating the requirements pertaining to the hiring of managers, and the human resource department's role in identifying graduates who have a combination of business and IT subjects. These organisations have addressed the future recruitment process.

At an executive and senior leadership level, individuals have enrolled on courses that will improve either their business or IT skills. Leaders in organisations seek to understand the complexity of technology and data and how both can be used to improve the capabilities of their team as expressed by (B-A1 and B-A2). Leaders in the organisation are equipping themselves with skills in which they are lacking (B-A2). In addition to also improving their skills, leaders are also collaborating with other leaders to become more proficient in the skills that they are lacking. The view expressed by (B-E1) states that they "I lead a team that consists of developers, and my right arm is our head of IT. With our combined skillset, we able to make a strategic decision about the business and discuss the impact both from an IT and business perspective". The view expressed from (DB-1) indicates that collaboration is not limited to the leadership team in the organisation. All employees are encouraged to collaborate across the organisation; individuals who are in finance departments are encouraged to collaborate with the IT department and learn more technical skills.

Based on the data, there is an indication that in the traditional banks (Banks A - E) within the lower levels of the organisation, there is resistance to the competency of Business and IT Acumen. The participants from (B-A1, B-A2 and B-A3) indicated that the deployment of the competency was met with resistance by those employees who are part of the business department and did not see the need to improve their technical skills. On the other hand, the participants from (B-A1, B-A2 and B-A3) shared that the IT department of the organisation was accepting of the change in leadership competencies and the changing environment. These individuals are aware of the 4IR and the impact that it will have on the organisation. Participants from Bank A, (B-A2 and B-A3) elaborated on the fact that part of the reason for the resistance to change is due to the age complement of the organisation. A number of older staff are reluctant to change and adapt to new ways of work. Similarly, these leaders are also reluctant to change their leadership style and embrace the changes in the transition to the 4IR.

The notion of individuals who work in other frontline functions in the organisation resisting the business and IT acumen competency is also supported by (B-D1). Further, stated by (B-D1) that within their organisation, the IT department was accepting of the competency and was eager to learn the business skills.

Based on the data collected, there is an indication that the vision of the executive and senior leadership teams are accepted by senior individuals in the respective organisations. The majority of the participants have mentioned the numerous initiatives that they are involved in that will improve the internal capabilities and digital offering of their organisation. These initiatives are in addition to their assigned duties. However, this vision of the leadership team is being received with mixed feelings at the lower levels of the organisation. (B-D1) Indicated that senior leaders are hosting open sessions and conferences to communicate their vision of the organisation to the employees, especially those in the lower levels in the organisation. This type of initiative was supported by (B-D2). However, the participant also expressed that communication after the event is crucial to ensure that the vision is successfully executed. The view expressed by (B-E1) states "At a senior level there has been a deliberate effort to ensure that the vision of the organisation is effectively communicated to all employees".

The data indicate that the executive and senior leaders in the organisations that participated in this study have empowered themselves. The view expressed by (B-A3) states that after the organisation restructuring, the senior leaders have encouraged individuals to improve their capabilities and education. Since the restructure, this message is being reinforced by the executive team to the employees at lower levels. Employees in the organisation are encouraged to learn new about new open-source software and how this software can be used in the organisation. The view expressed by (B-B1) indicates that in their organisation, they have empowered the employees by enabling them to understand their customers better. With a deeper understanding of the customers, the bank will be in a better position to service them and develop a sustainable relationship.

The organisational response to the deployment of skills such as business and IT acumen has been received with a mixed response. Executives and senior leaders have been more receptive to the deployment of these skills, whilst employees at the lower levels of the organisation are resisted these skills.

5.4.2.3 Interview Question F

Based on the deployment of these skills has there been a notable impact on bottom-line performance in your organisation?

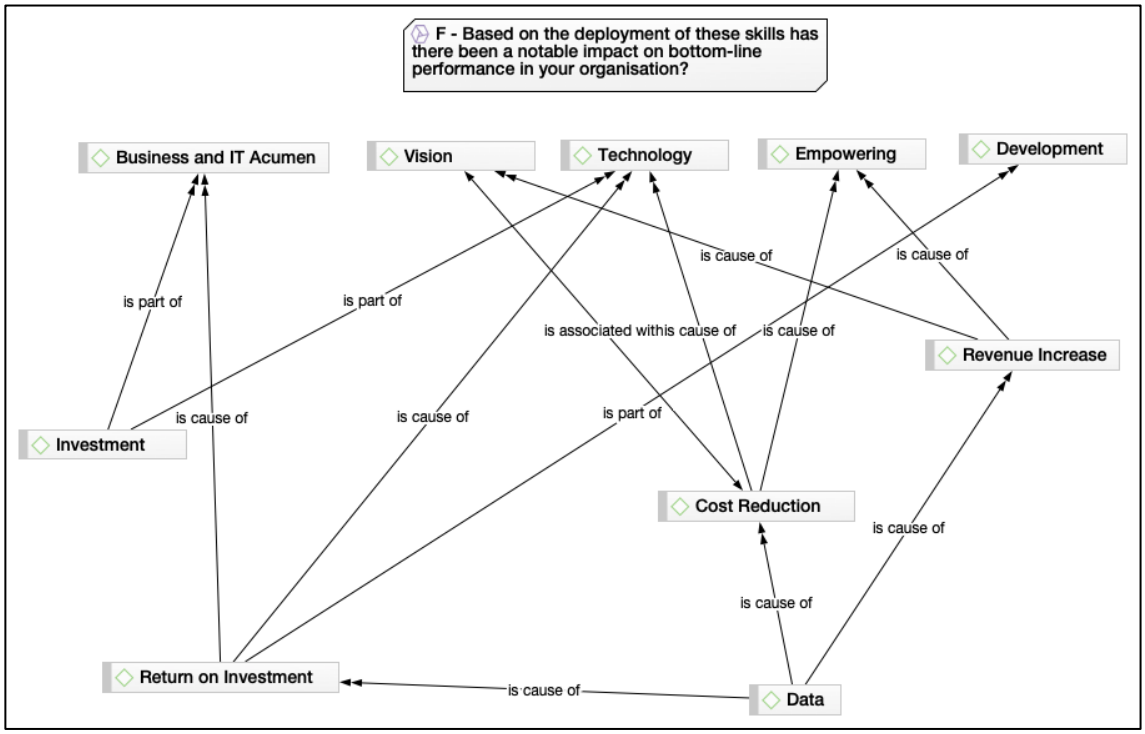

Figure 15: Impact on bottom-line performance

All participants agreed that the advent of the 4IR and the new technologies that have been developed would affect the bottom-line performance of the organisation. Figure 15 depicts the benefits organisations are experiencing by the transition to the 4IR, where the competencies that have been previously mentioned are concerned. Based on the data collected from the organisations that participated in the study, there is an indication that the bottom-line performance will be affected in terms of cost reduction and increased revenue.

Cost reduction can be experienced through a reduction in system licencing fees. This is currently being experienced at Bank A, where the organisation can use open-source software which does not require annual licence fees. This premise of cost reduction and open source software is expressed by (B-A2) who stated that "With open-source software, there are no licensing fees and this affects the bottom-line performance,". Being able to use open-source software has reduced the operational costs and increased revenue, but has also improved internal efficiencies in the organisation.

Integrating open-source software into the existing architecture has resulted in an improvement in the skillset of staff. Employees can explore and adopt technologies that they have an interest in. This also empowers and encourages employees to look for new opportunities and instils a sense of inclusivity in the organisation.

The majority of the participants also expressed the view that the investment in improving the data capabilities of the organisation has resulted in improved strategic decisions by the senior leadership team. The improved data also resulted in identifying new opportunities in terms of products and services that are offered by the organisations.

Participants from (B-A1, B-A2 and B-A3) and (B-C1) all indicated that their respective organisations are in the investment phase of the 4IR, but said that the financial investment has not been recouped by the organisation yet and that the return on investment could be expected within the coming years. These organisations are also heavily dependent on their legacy systems, further delaying the return on investment.

The participant from (DB-1) said that it was difficult to calculate the direct impact on the bottom line performance due to the complex business model, but the organisation notes the return on investment from the data science lab and the reduction in fraudulent cases. At present, the participant from (DB-1) is unable to confirm if the bottom-line performance is impacted by the deployment of the new skills or the technologies to emerge from the 4IR.

The participant from (B-D2) stated that there had been a notable impact on the bottom-line performance of the organisation. The participant (B-D2) attributes the improved financial performance to the vision of the senior leadership team. The vision of the senior leadership team aimed to improve the efficiencies and digitally transform the business. Subsequently, once the vision was communicated, a strategy was developed. The employees of the department were tasked with the execution of the strategy. The participant (B-D2) expressed that the initial investment to digitally transform the business was costly, but the business is benefitting from the initial investment. This narrative is supported by (B-D1), who stated that leadership ambition and vision to improve internal process resulted in an R500 million saving in operational costs.

Based on the data collected, there is an indication that leadership competencies will impact the bottom-line performance of the organisation. The data suggests that cost savings can be achieved by leaders who empower and develop their employees to

identify alternative means to fulfil their duties. Leaders who have a high Business and IT Acumen will be able to impact the bottom-line performance of the organisation based on their ability to understand data and the financial impact it will have for the organisation.

5.5 Conclusion

This chapter presented the research findings based on the research questions and interview questions that were presented to the ten individuals that participated in this study. The findings discussed the leadership competencies that were identified in the literature in Chapter 2. In addition to the competencies that were identified in the literature, new competencies were developed through this process. These findings are to be discussed as contrasted with literature in Chapter 6.

Chapter 6: Discussion of Results

6.1 Introduction

This chapter presents a detailed discussion of the results presented in Chapter 5. The discussion is structured to relate to the research and interview questions, and the findings related to the literature as reviewed in Chapter 2 to gain insight into the research problem presented in Chapter 1.

The literature review process identified a knowledge gap expressed by Hess et al. (2016) and Loonam, Eaves S, Kumar and Parry (2018) whom both indicate that literature on leadership competencies in traditional banking models is limited. The research findings contribute to both practice and theory, as the study offers new insights from experienced banking leaders on the competencies required to lead in the banking industry since the advent of the Fourth Industrial Revolution (4IR).

6.2 Discussion Research Question One

RQ 1 - From an employee perspective, what is the impact of the 4IR on the South African banking sector?

Research question one explores the impact of the 4IR within the South African Banking industry. Due to the complexity of the 4IR, it was necessary to frame the discussion around the context of the 4IR and obtain a view of the participant's articulation of the concept.

The traditional banking model that has served the industry for a number of years is experiencing a shift caused by digital transformation (Sia & Soh, 2016). Banks are embracing the new technology that is available through the development of the 4IR (Nuyens, 2019). Banks are embracing new contemporary project management methods and new ways of work (Nuyens, 2019). It was expressed through the interview process that adopting a new way of work is an essential part of the 4IR. A leader needs to be adaptable and embrace a new mindset for 4IR (Shamim et al., 2016).

The emergence of the 4IR is strongly associated with technology. However, there is a need for a leader in providing the guidance that is required in the transition to the 4IR (Loonam et al., 2018). The development of leaders has been a challenge for the majority of organisations (Cumberland et al., 2016). The development of a leader is the most critical skill that a business needs to achieve (Cumberland et al., 2016).

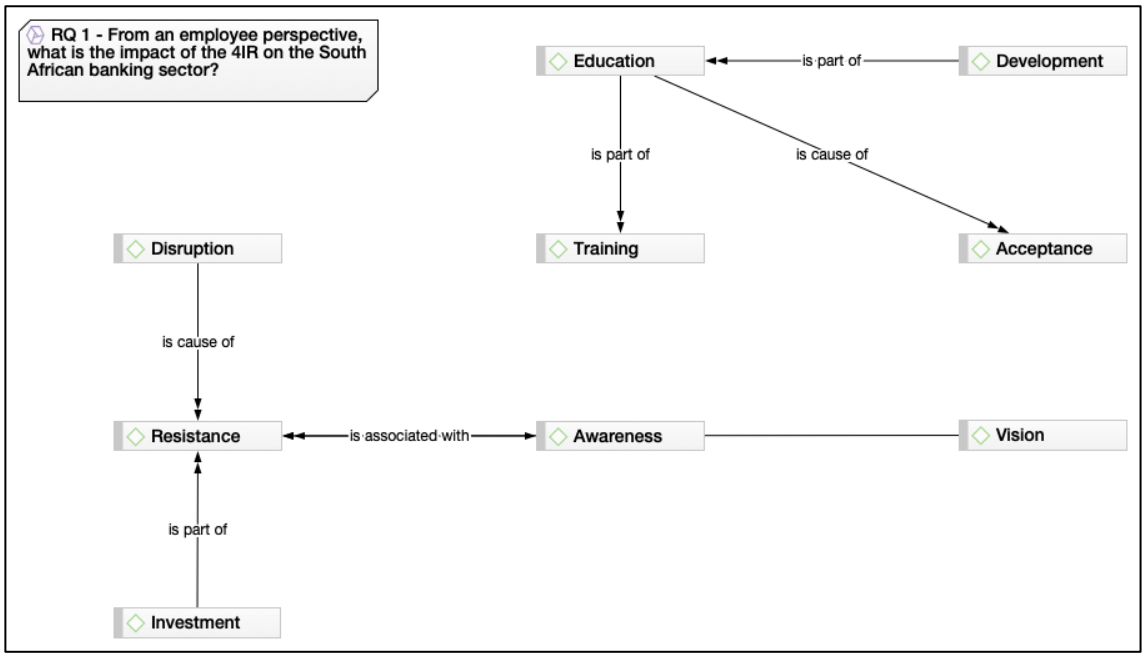

Figure 16: Codes for research question one

Figure 16 depicts the codes that are linked to research question 1. Based on the data that was collected via the interview process with leaders in the banking industry, these are the standard codes that emerged. The researcher grouped the codes based on the clustering method described in Chapter 5.

Resistance to change was a predominant code expressed by the majority of the participants from the various organisations. The literature review did not indicate employees resistance to change either that of new technology or their leaders. Based on the data analysis, linked to the code of resistance is disruption, awareness, vision and investment.

The next code identified by the researcher is Education. Linked to the main code of education are training, development and acceptance. The principal codes and sub-codes are further deciphered through interview questions that were presented to the participants. As stated in Chapter 4, the same set of questions was presented to each participant for consistency.

6.2.1 Interview Question A

How has the transition to the 4IR been received in your organisation across all organisation layers?

The first interview question assesses the impact of the 4IR within the participant's organisation. Based on the data that was collected in Chapter 5, the principal codes to emerge include strategy, acceptance, vision and resistance to change. The data from the interviews represent the opinions of leaders who are employed in the banking industry. Therefore, the insights and opinions provided are based on the first-hand experience.

All the participants revealed that their respective organisations have embarked on a strategy that will incorporate more digital offerings in terms of automation, new ways of work and product and service offerings for customers. Based on the data collected from the interviews, there is an indication that digital transformation requires a strategy that can be successfully executed, well defined and adaptable. The majority of the participants from the traditional Banks A – C expressed the view that the execution of the strategy had proved a challenge for the organisation. At Bank A, for example, it was indicated that the original strategy had had to be redefined after three years due to a minimal return on investment. Ganguly (2015) states that to transform an organisation successfully digitally depends on the effectiveness of the organisation's strategy, technology and processes.

Embarking on a strategy that involves a digital transformation aspect requires the organisation to be aware of the three approaches postulated by Loonam et al. (2018). The organisation first needs to recognise the importance of the digital offering. Based on the data collected for this study, Banks D – F has recognised the importance of a digital offering. Bank DB embarked on their digital transformation 12-15 years ago, providing them with a competitive advantage. The data provided by Bank E suggest that a digital team was established to execute its strategy for digital transformation successfully. As Bank DB is a digital bank, services are delivered on the internet or

via a smartphone application. Bank DB has not adopted a strategy that involves digital transformation. Their strategy from inception has been to offer products and services via a digital platform, whereas the other traditional banks (Banks A - E) have had to adopt a strategy of digital transformation. Adopting this strategy means transitioning from complex legacy systems and structures to digital platforms.

The second approach identified by (Loonam et al., 2018) is understanding the key objectives and requirements for delivering digital transformation. The executives and senior leaders at Bank D – DB understood the benefits of digital transformation. Based on the data collected, Banks D - DB has transitioned to the 4IR and are experiencing costs savings and revenue increases on their bottom-line performance. Delivering products and services via digital platforms addresses the needs of their customers. Customers are adopting the technology that is becoming available through the 4IR, and there is a growing reliance of the internet, tablets and smartphone technology (Zhou, 2011). The last approach is to realise that the key benefit is for the organisation. Due to the rapid advancements in technology, organisations need to keep abreast and realise that adopting new approaches will be beneficial as indicated by Bank D. The data suggests that Bank D was able to disrupt the market with digital offerings before its competitors, the result is that they have consolidated their customer base.

The data also revealed that there was a high level of acceptance of the 4IR by executives and senior leaders by the respective organisations that participated in this study. Based on the data, there is an indication that executives and senior leaders have a better understanding of the 4IR and the implications that are associated with the transition. The data suggests that executives and senior leaders are better equipped to manage the transition to the 4IR. This stands to reason as leaders in organisations are tasked with providing the direction and support that the organisation requires. This is an essential factor which was not covered in the literature review in Chapter 2. A review of literature conducted post data collection did not indicate that different layers in the organisation would accept or resist the transition to the 4IR.

The data further revealed that there was resistance from employees in the lower levels of the respective organisation with the exception of Bank DB. The resistance to the 4IR is attributed to jobs becoming redundant due to technology. Frey and Osborne (2017) support the assertion that white-collar jobs will be impacted by the

4IR, however, in their research, there is no indication that different layers in the organisation will be affected by the 4IR. The resistance to the 4IR by employees in the lower levels suggest that the resistance is possibly linked to lack of education. In the view expressed by (B-E1), it is suggested that people are not educated about the 4IR and how it will affect their roles in the organisation. Employees in the lower levels are exposed to snippets of information about the 4IR, including how robots will replace humans. However, research by Frey and Osborne (2017) indicate that humans will find comparable roles or even new roles. The data collected for this study suggests that this message is not being adequately communicated by executives and senior leaders in the organisation to employees in the lower levels.

The data collected for this suggests that there is a direct link between strategy and vision. Dulewicz and Higgs (2005) identified vision as a competency required by a transformational leader. Leaders are tasked with providing a vision that will inspire and motivate all employees in the organisation (Bednall et al., 2018). The data provided by (B-B1) indicates that it was the vision of the executive leadership that adopted a strategy of digital transformation. This narrative is further supported by (B-E1) and (DB-1) who suggested that for both their organisations respectively, adopting a strategy of digital transformation and that of a digital bank was envisioned by the executive leadership team. However, the data also suggests that once the vision is communicated by executives and senior leadership, leaders need to continue reinforcing that message of vision. Both participants from Bank D indicated that the vision of their executive leadership team was successfully executed by the employees in the organisation because the vision was reinforced continuously.

Based on the data collected, the transition to the 4IR requires a strategy that is well-defined and adaptable, given the rapid pace at which technology is advancing. The data also indicates that strongly linked to the strategy of the organisation is the vision for the leaders. Vision is a leadership competency identified in the literature by many scholars and is reinforced by the participants in this study.

6.2.2 Interview Question B

What have been the notable challenges faced by your organisation in transitioning to the 4IR?

It emerged from the data that the challenges faced by the organisations in the transition to the 4IR are centred around resistance to change, education, data and the dependency on legacy systems. These challenges were expressed by all the participants, even Bank DB, which is a digital bank.

Based on the data collected the execution of the strategy was identified as a difficulty experienced by Banks A – B. At Bank A the original strategy that was envisioned by the executive leadership team had to be redefined due to significant investments and no return on the investment. After three years, the decision was made to establish smaller data teams that would be dedicated to the individual business units. Bank B deployed a strategy of digital platforms for customers in the informal sector. The data indicates that this strategy was deployed without sufficient data or understanding of the customer needs or the sector. Chan and Ma (2017) states that the successful execution of strategy requires financial support from the executive board and commitment from all layers in the organisation.

Resistance to change as defined by Ali, Zhou and Miller (2016) is an intentional act to defy the leadership request for change; it is the behavioural expression of an employee to a system change. The data collected supports the assertion by Ali et al. (2016) (B-D1) stated that the introduction of new technology in the organisation was declined by employees in the lower levels of the organisation due to fear that the technology would affect their role in the organisation. User resistance to the change of an information technology system is collective as stated by (Klaus, Blanton & Blanton, 2010). There are leaders within Bank A that are resisting the change to the 4IR, as stated by (B-A3). Based on the data collected, there is an indication that employees in the organisation are not willing to adapt to the new technology of the new ways of work.

Linked to the resistance to change is education, as suggested by the data. Education emerged as a challenge that is experienced by all the organisations that participated in this study and at different layers in the organisation. The majority of the participants articulated that employees at the lower levels of the organisation were fearful of the 4IR and the implications it will have. The data suggests that these employees are not being educated about the 4IR by their respective organisations. As indicated by (B-

E1) employees are not being educated on the future of their roles in the organisation. Research by Frey and Osborne (2017) suggest that humans will find comparable roles or even new roles in the 4IR.

The data also suggested that at an executive and senior management level education on the 4IR has been emphasised. Further to this, the data suggest that individuals at higher levels in the organisation are re-educating themselves and improving their capabilities. Schuchmann and Seufert (2015) suggest that education, training and development is key to the success of the organisation. The importance of improving the internal skills of the organisation to improve the performance and internal capabilities of individuals was expressed by (B-D1). The data supports an assertion made by Hess et al. (2016) who state that key to a digital transformational strategy is the internal skills that are available to integrate, process and exploit new digital strategies. The data collected is populated by leaders in a South African context. Further research will have to be done to establish whether the education of employees at different levels varies to such a degree in comparison to South Africa.

The data suggests that the traditional banks (Bank A – Bank D) featured in this study struggle with legacy systems issues. A view expressed by (B-D2) indicates that legacy systems are a significant challenge for the organisation. The business unit needs the ability to transform data in real-time, but the capabilities of the legacy of the system do not cater for this, and the organisation had to integrate a system that was able to provide this functionality. This approach to integrating new technology along-side existing systems is supported by Loonam et al. (2018), who guides an organisation on integrating new technology while maintaining their existing legacy system.

Loonam et al. (2018) postulate that there are approaches available to an organisation to integrate new technology. An integrated approach of a system across all platforms can be executed. Based on the data collected from the organisations that participated in this study, there is an indication that all the Banks, except for Bank DB, have adopted this approach. Banks A – E has introduced new technologies that work in combination with their current legacy systems. Loonam et al. (2018) also advise the data analytics will provide a competitive advantage for an organisation. The data retrieved from Bank D indicates that improving the quality of data in the organisation will provide a competitive advantage. Bank D was able to improve its

data capabilities and disrupt the industry. As a result, they consolidated their customer segment.

Based on the data and the analysis that pertains to interview question B, there is an indication that leaders in the 4IR require the competencies that are linked to change management. The overall subject of change management was not covered in the literature review in Chapter 2. However, a few of the competencies identified by Crawford and Nahmias (2010) on their research pertaining to leadership competencies for successful change management is similar to that of Dulewicz and Higgs (2005) list of transformational leadership. Crawford and Nahmias (2010) identified that competencies required of a leader include development, communication, decision-making and problem-solving. These leadership competencies are similar to those identified by Dulewicz and Higgs (2005).

6.2.3 Interview Question C

How have these challenges been resolved by senior leaders in the organisation?

The data revealed that the leadership teams in the organisations that participated in the study are being proactive and resolving the challenges and concerns of their employees. This was expressed by all the participants that were interviewed for this study. The participants may not agree with the approach taken by the leadership team, but there is a consensus that the leadership is attempting to address these critical issues. The challenges that leaders have to manage in the transition to the 4IR include resistance to change, education on the 4IR and associated implications, data management and the organisation's dependence on legacy systems.

Based on the data collected, the executive leadership team at Banks A and Bank B are attempting to resolve their issues pertaining to strategy. At Bank A, the leadership have redefined the strategy for the organisation and have adopted an approach that is more targeted to individual business departments. The massive data team that was established to oversee the organisations data capabilities was dismantled into smaller teams and assigned to direct business units. The data provided by (B-A1) and (B-A2) suggests that this approach has been more useful for the bank. The business units have been more accepting of this strategy. At Bank B, the executive leadership team retraced their steps and are conducting market analysis on the

customer segment. Their future product offerings will be more aligned the customer requirements.

Ali et al. (2016) recommend a change management model that will counteract user resistance to change. The model consists of four strategies, namely directive, participative, supportive and coercive. A directive approach refers to a managerial authority to implement change. This approach will include training on the new process, rewards for performance and performance reviews. Based on the data that was collected, there is an indication that the leadership teams at Bank B and Bank E adopted this approach. The respective leadership team at Bank B embarked on a digital offering to the informal sector before understanding the market and culture of the sector. The leadership team at Bank E were more successful in their approach, having established a digital team be established. The digital team has increased the capabilities of the organisation and impacted the bottom-line performance of the organisation.

A participative approach involves the employees in the change process. The vision of the change is shared by the leader who inspires the employees. The next vital step is to allow the employees to participate in the change. This sense of inclusivity could lead to overcoming the resistance to change. The leadership team at Bank DB adopted this based on the data offered by both participants. Both participants (B-D1 and B-D2) referred to that fact that the digital strategy at their organisation commenced twelve to fifteen years ago. The vision was shared by the executive leadership team, and once it was shared, employees were encouraged to participate in the execution of the vision.

The supportive approach refers to the moral aspect of the employee during the change process. Employee participation and empowerment can reduce resistance to change. Empowering the employee allows them to be invested in the decision-making process. This approach has been adopted by (B-A2) department leadership teams. In their department, the leadership team is encouraging and empowering employees to improve their capabilities. The leadership team is encouraging employees to learn about new open-source software and introduce the software to the organisation.

Lastly, the coercive approach suggests that imposing the change on employees is the most effective means of managing resistance. However, this is viewed as a last resort to managing the resistance to change in the organisation. Based on the data, there is no indication that any of the organisations have adopted this approach.

Education is being disrupted by the 4IR in terms of the traditional curriculum and the medium in which modes of learning occur (Xu, David & Kim, 2018). The curricula at high schools and universities need to include aspects of artificial intelligence, automation, robotics and genetic engineering (Xu et al., 2018). Bennis (2013) postulates that leaders involved in the digital transformation strategy need to embrace the transition and develop their skills to understand the digital environment. Based on the data collected it was expressed by (B-A1) that the organisation or at least their departments have collaborated with universities to identify potential graduates who have a combination of subjects such as mathematics, statistics and business courses. The organisation has identified that the combination of these skills will be beneficial to the organisation in improving its data capabilities.

The expected benefits to be gained from big data will differ from organisation to organisation. It is mostly expected that the banking industry will substantially benefit from the use of big data (Chandani, Mehta, Neeraja & Prakash, 2015). Chandani et al. (2015) further state that the expected benefits for the banking industry include understanding the customer and market needs, resolving customer issues through data analysis and offering customised digital products and services to customers. Chandani et al. (2015) further state that the more banks adopt big data and analytics into their operations, the more there will be a positive impact on the bottom-line performance for the organisation. The data collected supports this as the view expressed by (B-D2) that by improving the quality of data in the organisation, their internal efficiencies have improved as well as its pricing model. This improved the bottom-line performance for the organisation, in terms of reducing operating costs and increasing revenue. At Bank A, it was expressed by both participants (B-A1 and B-A3) that the organisation has established a data team to cater to the organisation's data collection needs. The view expressed by (DB-1) indicates that the bank division and the organisation as a whole invested in external data science labs to improve their data capabilities. The data collected by the participants support the narrative offered by Chandani et al. (2015).

Based on the data collected the majority of the participants except for Bank DB, indicated that their organisations are affected by legacy system issues. Executives and senior leaders are faced with the challenge of resolving this issue. The banks that featured in this study were established decades ago and were developed around these core legacy systems. The cost of decommissioning these systems is not financially feasible for any of the organisations featured in this study. Based on the data collected, there is an indication that leaders in these organisations have opted for an integrative approach for the introduction of new technology that has evolved through the 4IR. This approach is supported by Hess et al. (2016), who states that integrating new technology into an organisation will improve the capabilities of the existing legacy systems. Hess et al. (2016) state that an organisation that employs this approach increases their capabilities to exploit new technology and gain a competitive advantage. The data collected from Bank DB suggests that the bank is still in the infant phase and is too soon to postulate whether their digital platform will provide the organisation with a competitive advantage. However, the data provided by (DB-1) does suggest that the other divisions in the organisation have gained a competitive advantage through its significant data capabilities. The view expressed by (DB-1) suggests that the insurance division is benefitting from big data. The division has managed to identify fraudulent claims sooner than was previously possible and reject these claims. Thereby reducing its operational cost and improving revenue.

Based on the data collected, there is an indication that executives and senior leaders in the organisation are attempting to address the issues that have emerged from the transition to the 4IR. Leaders are managing the resistance to change that is being experienced in their organisation. The data suggest that the organisations featured in this study all experienced a varying degree of resistance and that an organisation such as Bank D have managed the resistance to change better than the others. Based on the information provided by the participants from this organisation, indications are that the resistance was managed due to the soft management skills of the leadership. However, after much analysis, the researcher believes that there is insufficient data provided in this study to confirm this premise.

Based on the analysis of the data collected, leaders are attempting to resolve the critical challenges of the organisation that participated in this study. The data indicate that leaders in the 4IR require leadership competencies of change management. The subject of change management was not reviewed in Chapter 2 and emerged in the analysis of the data. This is a new finding identified in this study and does require further research.

6.3 Discussion Research Question Two

What new skills (competencies) are required of senior leaders in the South African banking sector in response to the 4IR and what has been the impact on your department and organisation?

Research question two explores the competencies that have been required of a leader in the banking industry since the advent of the 4IR. The literature on digital transformation leadership is limited has only guidance is on aspects of digital transformation is offered Hess et al. (2016) and Loonam et al. (2018). The views expressed by all participants are based on what is currently being experienced in their respective organisations.

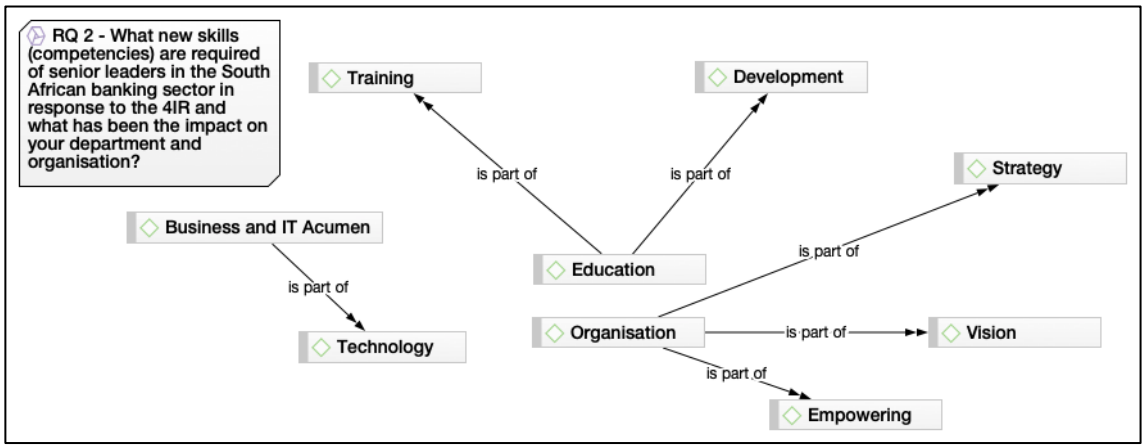

Figure 17: Codes for research question two

Figure 17 depicts the data codes that are linked to the research question. Based on the data collected from the interview processes, the competencies required of a leader were grouped by the author at in order of importance namely, business and information technology (IT) acumen, education and vision.

All participants expressed a view that a leader in the 4IR requires active business and IT acumen understanding. In addition to a technical understanding of new technology and data, a leader should also have a vision that will inspire their followers (Bednall et al., 2018). Glenhorn (2015) states that a leader needs to be aware of the impact IT has on the business in terms of the infrastructure, client relationships, business processes, competition, efficiency and even productivity.

Dulewicz and Higgs (2005) suggest that a critical competency required of a leader is a developmental competency. The researcher has linked this competency to the education code. Leaders need to continually empower their followers to take on more significant tasks and roles (Dulewicz & Higgs, 2005). The majority of the participants stressed that a high level of self-education is required by a leader. Education through experience and hands-on involvement was acknowledged as an essential competency for effectively leading in the 4IR.

Mumford et al. (2017) state that vision through leadership has the ability to inspire and increase a follower's commitment to the organisation. Vision provides the direction that followers require and provides a connection to the leader and the organisation for the follower.

6.3.1 Interview Question D

Describe the new skills required to lead the 4IR in your organisation and how were these identified?

Based on the data collected, the participants articulated that the essential competencies required of a leader in the 4IR are, Business and IT acumen, vision, empowerment and development. These competencies were identified and suggested by leaders who are currently employed in the banking industry and who are assisting their organisations in the transition to the 4IR.

The data collected suggests that a critical competency required of a leader in the 4IR is one that has a business and IT skillset. The majority of the participants indicated that leaders need to solve complex problems both in the front-line business and within the IT department. The view expressed by (B-A1) indicates that leaders in the 4IR require a blend of computer science, mathematics and science to solve complex business problems that the organisation is may be experiencing. The majority of the participants articulated the need for a leader in understanding the technology that

has been introduced through 4IR. The views expressed by the participants stated that a leader not only needs to understand the current technology that is in the organisation, but also new technology that can be introduced into the organisation.

Critical Analysis and Judgment is a competency that was identified by Dulewicz and Higgs (2005). However, the data suggest that the complexity of the 4IR requires a new competency for a leader in the 4IR. Based on the data, it is recommended that the following competency, Business and IT Acumen be added to Dulewicz and Higgs (2005) list. The Business and IT Acumen competency will be added to the Managerial Quotient.

Based on the data collected the Critical Analysis and Judgment competency identified by Dulewicz and Higgs (2005) is to be retained. Ay, Karakaya and Yilmaz (2015) state that critical thinking is one of the most critical factors for present leaders to be effective in their organisation's future. The participants agreed that this is a vital skill that is key to leadership. A view was shared by the majority of the participants that leaders should also encourage critical thinking within their respective teams. Leaders should also encourage their followers to question assumptions, reframe problems and identify solutions to complex problems (Tyssen et al., 2014). Critical thinking is an integral part of the digital transformation process. Critical thinking enables leaders in the organisation to comprehend the impact of their decision and the implications it will have on the organisation (Rezak, 2011). Critical thinking is based on personal preparation; education, training, work experience and skills that are incorporated (Mcvey, 1995).

Leaders provide a vision and a sense of mission that inspires and motivates their followers. The vision of a leader inspires their followers and provides a sense of inclusivity to the organisation (Dulewicz & Higgs, 2005). A view shared by all participants is that vision forms an essential aspect of leadership. The data from the participants is further supported by Müller et al. (2010), who has stated that vision is a crucial competency. Innovation requires a visionary leader who can champion an idea that is capable of influencing others in the organisation (Bednall et al., 2018). Bednall et al. (2018) state that transformational leaders can evoke a high level of innovation within their organisation through a shared vision that inspires and intellectually stimulates. Jensen, Moynihan and Salomonsen (2018) state that vision can increase an employee's commitment to their organisation, which is linked to their performance because more considerable energy and effort are invested towards a

goal that is perceived as meaningful and significant. (Jensen et al., 2018) Postulates that face-to-face communication is the most effective means of communication. By communicating the vision face-to-face, a transformational leader is able to (i) translate the organisational vision into goals and provide feedback to employees when differences in interpretations to the vision arise, (ii) identify authenticity gaps in employee's perception of their leader's leadership by bringing a personalised element of communication and (iii) promote the process of employee self-persuasion as employees consider their contributions to the organisation (Jensen et al., 2018).

The Empowering and Developing competency identified by Dulewicz and Higgs (2005) needs to be retained by leaders in the 4IR. This assertion is supported by the data collected. It was articulated by the majority of the participants that leaders need to empower and develop their employees. Giles (2016) states that it is the responsibility of the leader to ensure that they provide opportunities to grow and develop their employees. Leaders in Bank A are allowing their employees to explore new software that can be integrated into the bank. At Bank, D employees are encouraged to be involved in coding projects and competitions that are not part of their assigned tasks. The data also suggests that leaders are tasked with developing their employees. At Bank E, the leaders encouraged their IT developers and business analysts to engage with customers. This allowed their employees to understand the customers' needs better and identify new opportunities for the organisation.

6.3.2 Interview Question E

What has been the organisational response (across all layers) to the deployment of these new skills?

The skills identified by the leaders who participated in this study include Business and IT Acumen, Vision, Empowering and Developing. The response to these competencies is discussed further.

Based on the data collected, a leader requires a new competency which is Business and IT Acumen. This competency was suggested by the majority of the interviewees that participated in this study. Bank A has responded to this competency by collaborating with universities in South Africa to identify potential graduates whom they could recruit. The organisation aims to identify graduates who are enrolled in

courses that have a mixture of mathematics, statistics and business subjects. These graduates will be incorporated into the data team. A similar notion was expressed by participants from (B-D1) and (B-E1), where their respective organisations have been mandated to target prospective candidates who are proficient in mathematics, statistics and business subjects. The data suggest that these organisations are addressing their future recruitment process.

The data indicate that employees at the lower levels of the organisation had mixed reactions to this competency. At Bank A, the data indicates that employees in both the senior and lower levels of the organisation have resisted this competency., and that employees are not willing to adapt to a new competency. Employees in the front-line of business have resisted learning a computer programming language or understanding the technicalities of new technology that has been introduced. The response of these participants is an indication of anxiety and uncertainty. The change affects all employees in the organisation. Research done by Basyal and Seo (2017) states that an employee's resistance to change is one of the major problems that is faced by governments and organisations today.

The data suggests that executives and senior leaders in the organisation have adapted to the competency of Business and IT acumen. The majority of the participants have indicated that they have enrolled on courses either through their organisation or online courses (B-A1, B-A2 and B-D1). Senior leaders are also encouraged by their executives to collaborate with other leaders in the organisation. The data from (B-E1) suggests they have a good understanding of the business requirements for their department. To improve the digital and data capabilities of their department, (B-E1) has collaborated with a senior leader from the IT department. This has improved the capabilities of the department as well as the technology that was incorporated.

The data collected indicates that Vision is a competency that is expected and accepted at all levels of the organisation. Senior leaders in all the organisations that have participated in this study have accepted the vision of their executives. Executive leaders in an organisation provide the guidance and strategy that is required for the organisation to transition to the 4IR (Bednall et al., 2018). The data provided does suggest that the vision of the executive leaders needs to be continuously communicated to the employees in the lower levels of the organisation and that this

needs to occur on a frequent basis, through direct communication or internal conferences held by the organisation.

The competencies of empowering and developing are still essential to leaders in the 4IR. The organisational response to these competencies of the organisations that participated in this study indicates that employees at the lower levels still yearn for these competencies from their leaders. However, the data suggests that this empowerment and development is dependent on the department of the organisation. The views expressed by (B-D1) suggests that employees in the IT department were willing to learn new IT and business skills to improve their capabilities. It was further stated by (B-D1) that the front-line business individuals resisted learning about the new technology that was being introduced into the department or learning an IT skill that would improve their capabilities.

Based on the data collected, there is an indication that the organisational response to the deployment of the skills has been mixed. Senior leaders and individuals have been more accepting of the skills and indicated a willingness to learn and embrace these skills.

At the lower levels, there has been a mixed response to the deployment of these skills. The data suggests that the acceptance of these skills is based on the department. Individuals who are in the IT department have been more accepting of the skills and have indicated a willingness to learn business skills. Individuals based in the front-line of business have been more resistant to adopting the new competencies.

6.3.3 Interview Question F

Based on the deployment of these skills has there been a notable impact on bottom-line performance in your organisation?

The data collected suggests that the bottom-line performance of the organisation will be impacted by the 4IR. However, the premise of this question is to establish if the deployment of these competencies will impact the bottom-line performance of the organisation.

The data and literature suggest that the bottom-line performance will be impacted by the Business and IT Acumen competency. Chandani et al. (2015) state that the data capabilities of a bank can improve the bottom-line performance of the organisation. Improving the quality of data in a bank will improve its analytical capabilities, improve customer retention, improve price models and allow the organisation to offer new products and services. This notion by Chandani et al. (2015) is supported in the data by Bank A. Participants (B-A1 and B-A2) indicated that the bottom-line performance in their departments was improved through more efficient data capabilities. The participants (B-D2) indicated that through improved data capabilities, the bottom-line performance of the department and that organisation was impacted through cost reduction and increased revenue.

The data collected suggest that the empowerment and development of employees by leaders does impact the bottom-line performance of the department and the organisation. It is noted by the participant (B-A2) that employees are encouraged to learn about new open-source software that can be integrated into the organisation. Open-source software does not require licences; therefore, the organisation is able to reduce its operational costs which impact its bottom-line performance. The participant (B-E1) indicated that further developing the IT employees with the business skills and encouraging customer engagement, improved the capabilities of the employees and increased the revenue of the organisation. The IT employees were able to identify new opportunities and improve the internal processes of the organisation once they understood the front-line business requirements, which in turn impacted the bottom-line performance of the organisation.

The data collected does indicate that the leadership competency Vision impacts the bottom-line performance of the organisation. More research is required to determine whether this competency has any effect on the bottom-line performance on the organisation.

6.4 Review of Competencies

An evaluation of the competencies identified by Dulewicz & Higgs (2005) and the data collected from the interviews will be presented in this section. The table below lists the competencies identified by Dulewicz & Higgs (2005).

The competencies required for a transformational leader identified by Dulewicz & Higgs (2005), the subsequent quotient groupings were done by (Müller et al., 2010). The last column in the table, Data Frequency, is derived from the data collected for this study.

Table 4 - List of Competencies with additions

Group	Competency	Goal Oriented	Data Frequency
Intellectual Quotient (IQ)	Critical analysis and judgment	High	2
	Vision and imagination	High	15
	Strategic perspective	High	15
	Business and IT Acumen*	***N/A***	***11***
Managerial Quotient (MQ)	Engaging communication	Medium	8
	Managing resources	High	11
	Empowering	Low	12
	Developing	Medium	12
	Achieving	High	1
	Education*	***N/A***	***11***
	Training*	***N/A***	***11***
Emotional Quotient (EQ)	Self-awareness	Medium	0
	Emotional resilience	High	0
	Motivation	High	1
	Sensitivity	Medium	0
	Influence	Medium	3
	Intuitiveness	Medium	0
	Conscientiousness	High	0

***Competencies proposed by the researcher

6.4.1 Intellectual Quotient

The Intellectual Quotient (IQ) encompasses behaviours that are intended to increase the interests and improve the capabilities of a leader and their followers (Rafferty & Griffin, 2004). Dulewicz and Higgs (2005) identified the following competencies, Critical analysis and judgment, Vision and imagination and Strategic perspective. The data collected suggests that these skills are essential to a leader in the banking industry.

In the original research undertaken by Dulewicz and Higgs (2005), Critical analysis and judgment were deemed high in terms of its goal orientation. However, this competency was only mentioned twice in the interviews by (B-B2) and (B-C1). The remaining participants articulated that leaders need to adopt a Business and IT Acumen skill; this indicates that Dulewicz and Higgs (2005) list should be updated to include Business and IT Acumen.

6.4.2 Managerial Quotient

The managerial quotient is a combination of intellectual and emotional quotients. The review of literature Hossein, Hojjat, Zeinab, Esmaeil, and Negar (2016), says that the organisation is continuously assessing a leader ability to perform their role. (Müller et al., 2010) explains that leaders need to manage their resources effectively, empower and develop both the team and individuals and convey a strong sense of purpose to their followers.

Communication, Resource management, Empowering and Developing are skills identified by Dulewicz and Higgs (2005) which correlates to the data that was collected. Achieving is a competency that notably was not mentioned by the interviewees. Dulewicz and Higgs (2005) explain that Achieving is the leaders' ability to decide on a business issue that is likely to impact the business positively or negatively. The 4IR has improved the technology and data that is available to organisations. Therefore leaders can make decisions more accurately based on data rather than their instincts.

Based on the data, two additional skills needs, Education and Training, needs to be included to Dulewicz and Higgs (2005) list. The majority of the respondents expressed that leaders in the 4IR need to improve upon their undergraduate education.

The data also suggests that training on new technology and new ways of work is critical for the 4IR. Leaders need to be aware of how technology can improve their organisation and how new ways of work can improve the effectiveness of their team.

6.4.3 Emotional Quotient

The emotional quotient explained by Duckett and Macfarane (2003) states that the emotional quotient is one's ability to express emotion. It is argued in literate by Barling, Slater and Kellowway (2000) that leaders with high an emotional quotient will demonstrate behaviours aligned to transformational leadership behaviours.

The data collected from the interviewees correlate to what stated in the literature. The sample population barely mentioned the competencies identified by Dulewicz and Higgs (2005). However, analysing the data indicates that a leader requires a high degree of emotional quotient, given the fear that employees in the lower levels of the organisation have expressed about their roles.

6.5 Conclusion

Research question one was aimed at understating the impact the 4IR is having on the organisations that are featured in this study. The data collected and analysed confirmed that the banking industry in South Africa is aware of and transitioning to the 4IR.

Research question two sought to confirm the leadership competencies that are required of a leader in the 4IR. Based on the data collected, it emerged that a Business and IT Acumen skillset is required for a leader in the 4IR. The literature review that was conducted in Chapter 2 did not indicate that this competency is required of a leader. This is a new finding that was identified through the analysis of the data collected for this study.

An in-depth analysis of the proposed list of competencies required for a leader in the 4IR by the researcher will be discussed in the next chapter. In addition, business recommendations and the limitations of this study will be presented.

Chapter 7: Conclusion and Recommendations

7.1 Introduction

In this Chapter, the competencies identified by Dulewicz and Higgs (2005) will be discussed as they relate to the original list identified and developed through literature in Chapter 2, and the findings and further development in Chapters 5 and 6.

The research sought to identify the requisite competencies of leaders to impact the shift from a traditional business model to that of a digital model. Hess et al. (2016) and Loonam et al. (2018) have both stated that literature pertaining to leadership on digital transformation is fragmented, with academics only providing guidance. As a result, this study explored the leadership competencies that are required within the banking industry.

In this chapter, the leadership competencies required of a leader are shown, as derived from the theory provided in the literature review. This is compared and contrasted with the data collected from the interviews held with leaders in the banking industry, as presented in Chapter 5 and analysed in Chapter 6. This process of comparison enables existing theory to be confirmed, and new insights to emerge. It also suggests areas for future research, which are provided at the end of this chapter.

7.2 Leadership Competencies

Dulewicz and Higgs (2005) conducted extensive research on the competencies required of a transformational leader. Dulewicz and Higgs (2005) identified fifteen competencies required of a leader. Their list was then grouped by intellectual, managerial and emotional quotients (Müller et al., 2012). This is depicted in figure 18 below.

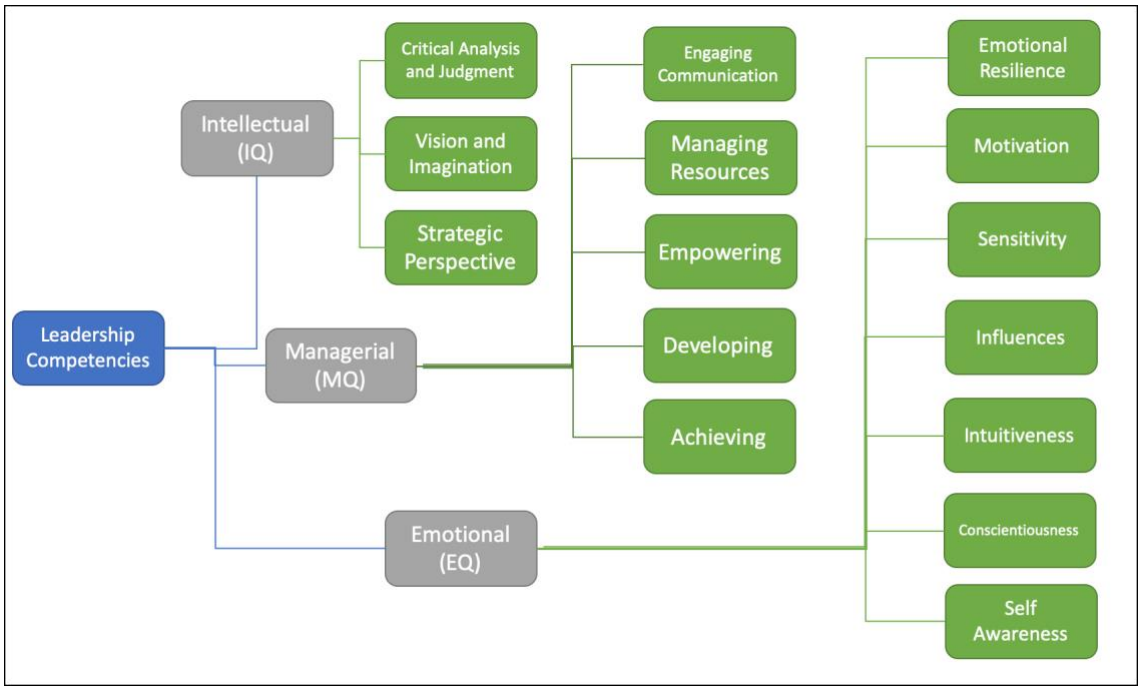

Figure 18: 15 Competencies of leadership (Müller et al.,2010).

Based on the data collected in Chapter 5 and the analysis conducted in Chapter 6, and with reference to the supporting academic literature on transformational leadership competencies in Chapter 2, the researcher proposes that the additional competencies mentioned in Chapter 6 be added to Dulewicz and Higgs (2005) lists.

Figure 19 depicts the changes proposed by the researcher to Dulewicz and Higgs (2005) original list of competencies. These changes are indicated in the orange blocks of the diagram.

Three additional leadership competencies, namely Business and IT Acumen, Education and Training, were identified as critical for leaders in the 4IR. These competencies were identified by leaders in the banking industry and form a foundation upon which future skills can be developed.

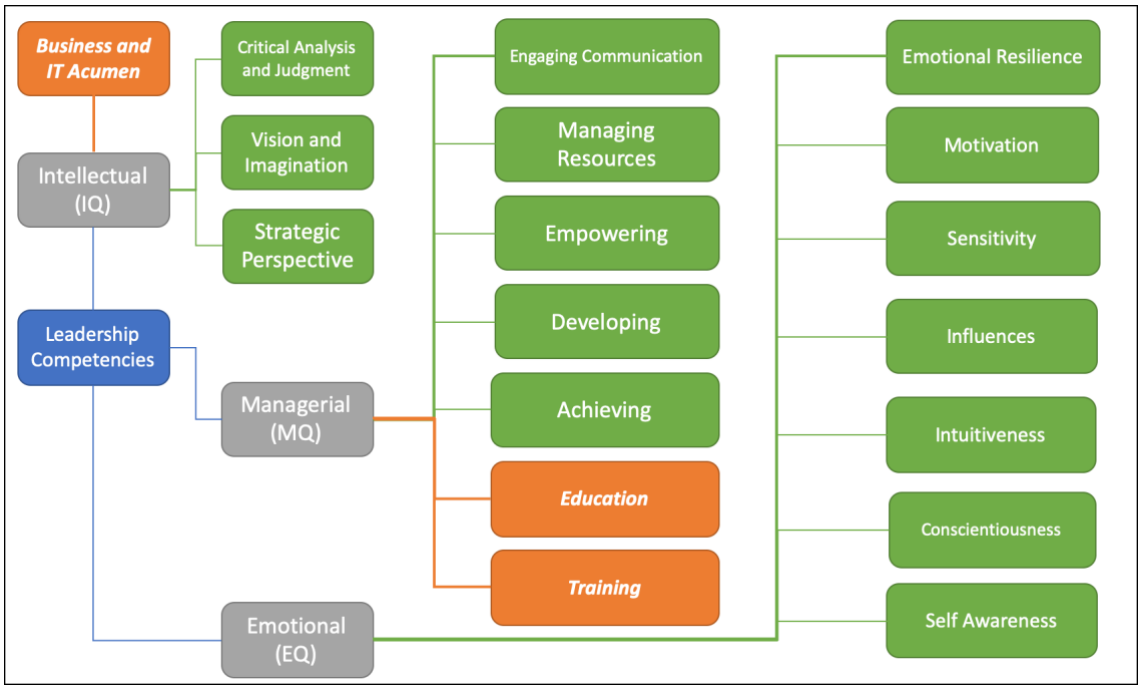

Figure 19: Proposed leadership competencies

7.2.1 Intellectual Quotient

The intellectual quotient intends to increase the abilities of followers in terms of conceptualising, comprehending and problem-solving. The intellectual quotient consists of the following competencies: Critical analysis and Judgment, Vision, Strategic Perspective and the new skill Business and IT Acumen.

The Business and IT Acumen is added to the intellectual quotient as the data collected indicates that this skill requires a leader to have an academic understanding of the business and IT. The majority of the participants indicated that a combination of academics and work experience is required to resolve those difficulties that organisations are experiencing in the transition to the 4IR.

7.2.2 Managerial Quotient

The managerial quotient intends on improving one's abilities, the performance of the team and aligning with the vision of the organisation. Based on the data collection and analysis, the researcher proposes that an additional two competencies, namely, Education and Training, are included to Dulewicz and Higgs (2005) list.

The data indicate that leaders need to improve upon their formal education as the curriculum is advancing at a similar pace to that of technology. Leaders need to stay abreast of the new academic findings that can be incorporated into a formal work environment.

The data also indicates that leaders require formal training on new systems that are being introduced in the organisation. Leaders also need to ensure that their employees are trained and improving the capabilities of the team and the individuals.

7.2.3 Emotional Quotient

Based on the data collected the competencies framed within the emotional quotient scored a low data frequency. This is an alarming observation given the importance of emotional quotient, as stated in literature by Duckett and Macfarlane (2003).

One assumption for the low data frequency of these competencies could be due to the small sample size of ten participants that were involved in this study. Therefore, it is suggested that future research be done with larger sample size.

7.3 Recommendations for Management

The interview data and analysis of the research and interview questions illustrate that the original list of competencies identified by Dulewicz and Higgs (2005) needs to be revised. Given the advancement in technology that is being made due to the impact of the 4IR, different transformational leadership competencies are necessary.

Leaders in the banking industry need to utilise a combination of skills, as highlighted in the proposed list of competencies by the researcher. There is a strong need for a leader to have a combination of business and technology understanding. This competency was expressed by the majority of the interview participants.

Organisations should consider incorporating training and development that will upskill not only their current leaders for the 4IR but also all employees. With adequate training on the proposed list of leadership competencies, the organisation will be able to implement the 4IR related changes at a faster pace. Training and development for employees will also reduce the resistance to change that is being experienced by the organisations that participated in this study.

7.4 Recommendations for Future Research

Research on leadership pertaining to digital transformation is fragmented, as expressed by Matt et al. (2015) and Loonam et al. (2018). The findings expressed in this study are somewhat speculative and indicate a need for further research on the leadership competencies required in the banking industry since the advent of the 4IR. Suggestions for future research include:

- The research focused on the South African banking industry, and the respondents originated from this sector. Future research should evaluate the applicability of the research findings to other industries that are impacted by the 4IR.
- The research findings require future researchers to explore the proposed competencies in more depth, and how these competencies could be incorporated within the banking industry or other industries affected by the 4IR.
- The findings of the study could be further validated by increasing the sample size in future iterations.
- The research findings on the resistance to change and change management based on the data collected indicates that future research is required to further evaluate the employee's response to the 4IR and to the deployment of the leadership skills.

7.5 Conclusion

The literature illustrates that there are transformational leadership competencies suggested by Dulewicz and Higgs (2005) that are still relevant in the context of the 4IR. However, the complexity of the banking industry and the 4IR means that additional competencies are required for leaders in this industry.

This research set out to close a knowledge gap that exists in the literature. The findings that emerged from the ten leaders interviewed established a foundation for future research to be conducted. This report identified new competencies required of a leader since the emergence of the 4IR and also identified competencies previously stated in the literature.

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Appendices

Appendix 1: Invitation to Participate in Research Study

Gordon Institute of Business Science
University of Pretoria

Informed consent letter

Dear _____

I am currently a student at the University of Pretoria's Gordon Institute of Business Science (GIBS) and completing my research in partial fulfilment of an MBA.

I am conducting research on the leadership competencies required for the Fourth Industrial Revolution (4IR) within the South African Banking Industry.

As such I hereby request an interview with you to obtain the relevant information that is required for the study.

To assist with your preparation for the interview, below are the list of questions that will discussed in the 30 minutes of your time that I respectfully request:

1. How has the transition to the 4IR been received in your organisation across all organisation layers?
2. What have been the notable challenges faced by your organisation in transitioning to the 4IR?
3. How have these challenges been resolved by the senior leaders in the organisation?
4. Describe the new skills required to lead the 4IR in your organisation and how were these identified?
5. What has been the organisational response (across all layers) to the deployment of these new skills?
6. Based on the deployment of these skills has there been a notable impact on bottom-line performance in your organisation?

With your permission, our interview will be recorded and transcribed for purpose of analysis. However no direct attribution will be made to you by name. All data will be reported without identifiers to preserve confidentiality. Your participation is voluntary and you may withdraw at any time without penalty. A copy of the research findings will be made available to you on request.

If you have any concerns, please feel free to contact myself or my supervisor. Our details are provided below.

Researcher Name: Gavin Govender
Contact Details: 04934522@mygibs.co.za

Supervisor Name: Colin Rowley
Contact Details: colinstuartrowley@gmail.com

Signature of researcher: _____

Signature of participant: _____

Date: _____

Appendix 2: Ethical Clearance

Gordon Institute of Business Science
University of Pretoria

22 August 2019

Govender Gavin

Dear Gavin

Please be advised that your application for Ethical Clearance has been approved.

You are therefore allowed to continue collecting your data.

Please note that approval is granted based on the methodology and research instruments provided in the application. If there is any deviation change or addition to the research method or tools, a supplementary application for approval must be obtained

We wish you everything of the best for the rest of the project.

Kind Regards

GIBS MBA Research Ethical Clearance Committee

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