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Exploring perceived effects of 4IR on leadership strategies in South African Mobile Financial Services firms

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business

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Johannesburg, 2022

Abstract

The Fourth Industrial Revolution (4IR) has brought about significant changes in the finance sector, including the rise of Fintechs and the growth of mobile financial services (MFS). The changing business landscape driven by 4IR, and its associated technologies is leading to a shift in the skills required for leaders. The skill sets owned by traditional leaders may become redundant due to the new technology-driven business environment. Understanding the effects of 4IR on leaders and how the associated 4IR technologies impact leadership strategies in the MFS sector is crucial.

The study focused on exploring the subjective experiences of leaders in an MFS organisation in Johannesburg, South Africa, taking a phenomenological approach. Nine leaders were sampled using purposive sampling. Semi-structured interviews were used as the data collection method, and thematic analysis was used to analyse the data. The findings highlight the critical role of leadership in driving the adoption and effective use of 4IR technologies. Leaders must be ready, willing, and equipped to drive the adoption of 4IR technology in their organisations while having a growth mindset and being comfortable with ambiguity.

Considering the Fourth Industrial Revolution's perpetual and transformative nature, leaders must align with the concept of future-proofing. Future-proofing is the process of anticipating and adapting to change, which involves identifying and mitigating potential risks, as well as seizing opportunities for growth and innovation. Therefore, leaders must embrace future-proofing to successfully prepare themselves and their organisations to navigate the Fourth Industrial Revolution.

Keywords: Fourth Industrial Revolution (4IR) technologies, leadership, leadership strategies, Mobile Financial Services (MFS), future-proofing.

Declaration

I, Michael Gray, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Name: Michael Gray Signature: 

Signed at Benoni

On the 26th day of February 2023

Dedication

Dedicating my research report to my wife, Candice Gray, is a heartfelt tribute to the person who has been my unwavering support system throughout this journey. Without her unyielding encouragement, I would not have made it this far. Her constant love and understanding have been a beacon of light, and her steadfast belief in my abilities has kept me going even when times were tough. Candice has been my champion when I needed one, offering words of comfort and guidance during times of self-doubt. She has been there to celebrate every milestone, no matter how big or small. Her faith in me and my vision have pushed me to work harder and to strive for excellence. I am deeply grateful for the love and support she has given me, and I dedicate this research proposal to her with all my heart.

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List of Acronyms

4IR	Fourth Industrial Revolution
AI	Artificial Intelligence
CDC	Centre for Disease Control
CX	Customer Experience
ICT	Information and Communications Technology
IoT	Internet of Things
MFS	Mobile Financial Services
ML	Machine Learning
RQ	Research Question
WHO	World Health Organisation

CHAPTER 1. Introduction

This chapter serves as a general introduction. It presents the background information, goals, broad objectives, specific objectives, research questions and significance of the study, problem statement, limitations, scope and delimitations of the analysis, and the overall organisation of the research proposal. The main purpose of this study is to investigate the relationship between leadership strategies and Fourth Industrial Revolution (4IR) technologies. This study entails investigating the details of how 4IR technologies affect leadership strategies in contemporary business landscapes. Research data for this study was obtained from senior individuals who are currently employed as leaders in a Mobile Financial Services (MFS) organisation in Johannesburg, Gauteng, South Africa.

1.1 Statement of purpose

The purpose of this qualitative phenomenological study is to explore the influence that Fourth Industrial Revolution (4IR) technologies have on leadership strategies at a South African Mobile Financial Services (MFS) firm.

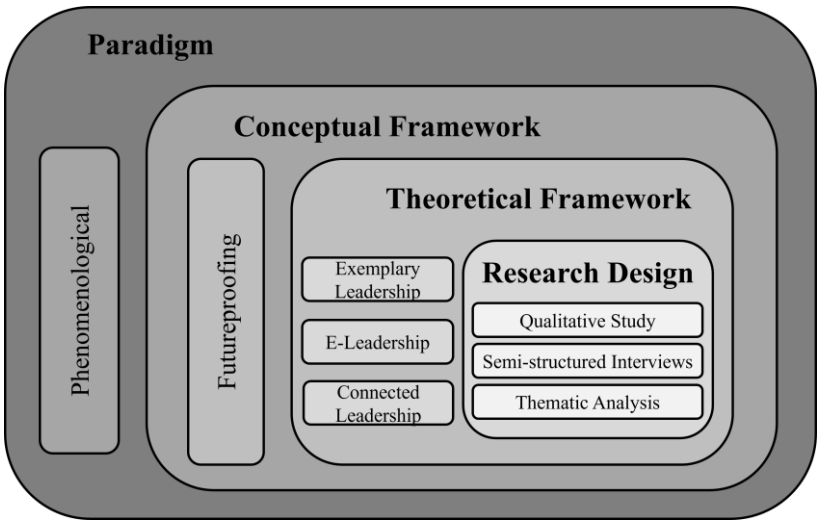


Figure 1: Research framework

(Source: adapted from https://www.linkinglearning.com)

1.2 Background of the study

An organisation's longevity and its ability to remain relevant depends on its leadership development (Moldenhauer & Londt, 2018). However, the Fourth Industrial Revolution (4IR) ushered in new leadership influencers like the Internet of Things (IoT), Artificial Intelligence (AI), Cloud computing, Big Data and Analytics, to name a few which, according to Smith and Green (2018), will be non-functional without adapted leaders.

1.3 Research problem

The changing business landscape driven by 4IR technologies may render the skill sets owned by traditional leaders redundant, thus causing leaders to be ineffective unless they upskill and align with the changes brought about by 4IR. Leaders within the 4IR may need to adapt to remain relevant.

1.4 Research questions

This study explores the influence 4IR technology has on leadership strategies in Mobile Financial Services (MFS) companies in South Africa.

Research question 1 – What is leadership's role in an organisation's adoption of 4IR technology?

Research question 2 – How does 4IR technology impact leadership strategies?

Research question 3 – How is 4IR technology driving Mobile Financial Services in South Africa?

1.5 Rationale

The changing business landscape driven by the fourth industrial revolution (4IR) and its associated technologies is leading to a shift in the skills required for leaders. According to Singh and Goyal (2020), leaders need to be knowledgeable about the latest technologies and their potential impacts on business operations. However,

traditional leaders may not possess the skill sets required to be effective in the 4IR business landscape. The skill sets owned by traditional leaders may become redundant due to the new technology-driven business environment (Jain & Singh, 2021). Leaders need to upskill and align themselves with the changes brought about by the 4IR to remain effective (Khan, 2020).

The preliminary review process revealed that while there is existing research on this topic, it is an avenue that could benefit from continuing supplementary understanding, particularly from a South African perspective, and due to the global acceleration of 4IR technology adoption (Agbehadji et al., 2021). Limited regional research on how 4IR technology influences leadership strategies in the South African Mobile Financial Services (MFS) sector also means that the results of this study may yield novel findings with theoretical and practical value. Thus, this study may contribute toward advancing the understanding of leadership strategy development during the 4IR and while 4IR technology impacts the business landscape in a South African context.

The 4IR has brought about significant changes in the finance sector, including the rise of Fintechs and the growth of MFS. Leaders in this sector need to be adaptable and innovative to keep up with these changes (Marwala, 2019). According to Marwala (2020), the success of MFS in South Africa depends on effective leadership that can navigate the fourth industrial revolution, including its fledgling regulation, and build trust and confidence among customers. Leaders in this sector must also understand the needs and behaviours of their customers to design products that meet their needs and enhance financial inclusion.

The importance of this study lies in its potential to contribute towards advancing the understanding of leadership strategy development whilst in the 4IR and influenced

by 4IR technology from a South African context. The results of this study may yield novel findings with theoretical and practical value, particularly in the MFS sector. The findings of this study may also provide insights into the ways in which leaders in the South African MFS sector can upskill and align themselves with the changes brought about by 4IR technologies so as to remain effective and competitive.

From a South African point of view, this topic is of great interest due to the accelerating adoption of 4IR technologies globally and the significant changes in the business landscape, particularly in the finance sector (Agbehadji et al., 2021). As noted by Marwala (2020), the success of MFS in South Africa depends on effective leadership that can navigate the fourth industrial revolution and build trust and confidence among customers. Therefore, it is crucial to understand the effects of 4IR on leaders and how the associated 4IR technologies impact leadership strategies in the MFS sector. Moreover, understanding and identifying the skills and knowledge required for effective leadership in this new business environment is as essential.

1.6 Delimitations of the study

I. Traditional financial services and retail banking has been excluded from this research as the focus is specific to MFS

II. Certain 4IR technologies: blockchain, genetic engineering, quantum computing etc. (All 4IR technologies not listed in the paper) have been deliberately excluded from this research

III. Middle management and non-decision-making management were not included as the focus of this study is on the lived experiences of leadership within an MFS organisation

1.7 Definition of terms

1.7.1 *Fourth Industrial Revolution (4IR) Technologies*

The Fourth Industrial Revolution (4IR) explains the fusion of advances in digital technologies that blur the lines between physical, digital, and biological spheres (Mann & Hilbert, 2020). 4IR technologies include artificial intelligence (AI), robotics, the Internet of Things (IoT), genetic engineering, and quantum computing (Wirtz et al., 2018). 4IR technologies are fast-erupting technologies that have the potential to disrupt almost any sector and provoke a rapid, significant change in longstanding systems (Mann & Hilbert, 2020).

1.7.2 *Leadership*

Leadership is a complex and dynamic process involving decision-making informed by collective experiences and encounters with various circumstances, personality types, and unpredictable failures (Greg et al., 2012). The history of leadership can be traced back to the beginning of humanity and continues to evolve alongside societal progressions and environmental shifts. Traditional leadership ideologies taught that individuals were born into a role rather than trained (Ekvall & Arvonen, 1991). However, contemporary approaches to leadership grounded in behavioural science principles, such as behavioural leadership theory (Wheeler, 2008) and transformational leadership theory (Bass, 1985), focus on how leaders behave and assume that other leaders can copy these traits.

Other vital theories like critical management theory (Clegg, Kornberger and Rhodes, 2005) highlight the political, historical, and social contexts that shape leadership and organizations and the importance of understanding power relations and resistance to leadership. Furthermore, the contingency theory (Fiedler, 1967) suggests that a leader's effectiveness depends on the interaction between the leader's style and the

situation and highlights the importance of understanding the organizational context in which leadership is practiced.

For the context of this paper, the definition of leadership will be limited to those individuals within an organization responsible for defining the organization's mission, identity, and strategies (Aregbeshola et al., 2011). Leadership are the people that fashion an organization's vision so as to provide meaning for others within the organization to align with (Adler et al., 2001).

1.7.3 *Leadership Strategies*

Leadership strategies refer to the set of actions performed by leaders to achieve an organisation's goals and objectives. These actions are often informed by various factors such as the organisational context, the external environment, and the leader's characteristics (Johns & Moser, 1989). According to Porter (1997), for an organisation to be successful on a sustainable basis, it must define, gain, and defend its competitive advantage. Thus, for this study, the strategies that the leadership within an organisation devise and deploy in pursuing and defending competitive advantage are considered leadership strategies.

1.7.4 *Mobile Financial Services*

Mobile Financial Services (MFS) is effectively the use of mobile phones, phablets, and tablets as a conduit to access and engage financial services (State of the Industry Report on Mobile Money, GMSA, 2021).

1.7.5 *Future-proof*

The concept of future-proofing is becoming increasingly important in the context of the Fourth Industrial Revolution (4IR), as it is widely acknowledged that 4IR is ushering in significant and perpetual change (Agbehadji et al., 2021). 4IR is characterized by the integration of technologies such as artificial intelligence, the

internet of things, and advanced robotics, which are transforming the way that businesses operate and compete (McKinsey, 2018).

Verhoef et al. (2021) note that through the prevalence and adoption of 4IR technologies, existing industries are being disrupted in their entirety, while at the same time, entirely new industries are forming. This disruption is also affecting business models that have previously been relied upon, making them less effective and, in some instances, redundant (Verhoef et al., 2021). As a result, it is becoming increasingly important for leaders and organizations to prepare themselves to defend competitive advantage and even thrive in this fast and continually changing environment (Sousa et al. (2022). This is where the concept of future-proofing comes in.

Future-proofing is the process of preparing an organization and its leaders for the future by anticipating and adapting to change (de Waal et al., 2020). This includes identifying and mitigating potential risks, as well as seizing opportunities for growth and innovation (de Waal et al., 2020). Future-proofing is not just about ensuring the survival of an organization, but also about positioning it for long-term success (de Waal et al., 2020).

1.8 Assumptions

i. Interviewees have experience with 4IR technologies.
ii. Interviewees understand how 4iR is impacting how they work.
iii. Understanding how 4IR technology impact leaderships strategies will improve leadership strategies in future.
iv. Leadership in MFS understand 4IR.
v. People can adapt, therefore so can leadership strategies.

1.9 Chapter Outline and summary

This chapter summarised the current knowledge concerning the relationship between leadership strategies and 4IR technologies. Prior studies by leadership experts have established future-proofing as a valuable framework for exploring past and present leadership strategies. There are currently few published applications of future-proof as a framework of reference for leadership strategies and 4IR technologies in South Africa and in the Mobile Financial Services (MFS) context. This was highlighted as a research gap. Consequently, this qualitative study may add a meaningful theoretical contribution to the collection of knowledge on leadership practices and strategies in a 4IR economy.

CHAPTER 2. Literature Review and Theoretical Framework

This chapter reviews existing literature on leadership strategies and Fourth Industrial Revolution (4IR) technologies. It starts with reviewing relevant underpinning theoretical frameworks of the study and empirical studies. The empirical review focuses on studies done on leadership strategies internationally and locally. The section ends by identifying three propositions that will feed into answering the research questions and formulating an appropriate conceptual framework for the analysis.

2.1 Introduction

The main purpose of a literature review is to assist readers in understanding the whole body of available research on a topic and inform readers of the strengths and weaknesses of studies within the existing body of work (Creswell & Poth, 2018). It comprises the presentation, classification and critical evaluation of its guiding concept or topical focus, which refers to an account of what is published on a specific topic (Creswell & Poth, 2018). This prevents reliance on one research study that may not reflect findings from other studies (Rhoades, 2011).

2.2 Background Discussion

COVID-19 as a Catalyst for 4IR Adoption

On the 5th of March 2020, South Africa reported its first COVID-19 case and by the 11th of March 2020, the World Health Organisation (WHO) proclaimed COVID-19 a global pandemic (Moonasar et al., 2021). According to the Centre for Disease Control (CDC), COVID-19 is a highly infectious and contagious respiratory disease (Garcia et al., 2020). Hence, WHO and its government stakeholders implemented rigid policies to curb the spread of COVID-19 to decrease the predicted high mortality rates (WHO, 2020). On the 27th of March, the South African COVID-19 committee and the president placed the country under national lockdown (Moonasar et al., 2021). National lockdown

is an emergency protocol that stipulates that nationalists from different countries stay home during a virus outbreak (Holland, 2021).

Impact of COVID-19 on South Africa

South Africa is a developing country, classified as an upper-middle-income country by the World Bank (Moonasar et al., 2021). In a survey conducted by Stats SA (2020), in 2020, the country faced a 29% unemployment rate and a 55% poverty rate, which were increased by the COVID-19 measures. The lockdown efforts to curb COVID-19 resulted in job losses, higher prices for food and other essential goods and disruption to employment (Sanchez-Paramano, 2020). Although many households felt the effects, low-income families would feel the profound and long-lasting impacts of those measures implemented (Moonasar et al., 2021). The lockdown decision and its restrictions were initially considered an effective strategy to protect vulnerable South African population members from infection.

COVID-19 Disruption to Business

COVID-19 disrupted several aspects of life, including business (Li et al., 2020). Measures to curb the spread of COVID-19 limited the gathering of people and required employees to stay at home. This shift changed daily routines, structures, working methods, and business models (Krishnamurthy, 2020). The challenge was how businesses would achieve the same results while employees worked from home. A response to the predicament was the switch from physical on-premises working to online working (Almeida et al., 2020). Overnight, businesses had to accommodate a distributed workforce relying on technology that facilitated synchronous and asynchronous online working methods. During the transition of moving from on-premises to remote working brought about by social distancing and other measure

restrictions due to COVID-19, digital platforms maintained the continuation of business engagement (Khan et al., 2020).

Leadership Responses to COVID-19

COVID-19 placed tremendous demands on business leaders. The humane aspect of the crisis alone produced fear among employees and other stakeholders, and the scale and unpredictability of the situation made it further challenging for leaders to respond (Margherita & Heikkila, 2021). The outbreak had the hallmarks of what Howitt and Leonard (2007) refer to as a "landscape-scale" crisis, which is an unexpected event or sequence of events of enormous scale and overwhelming speed, resulting in a high degree of uncertainty that gives rise to disorientation, a feeling of lost control, and intense emotional disturbance (Howitt & Leonard 2007).

Leaders must relinquish the belief that a top-down response will engender stability during a crisis (Howitt & Leonard, 2007). The typical company can rely on its command-and-control structure to manage operations well by executing a scripted reaction in routine emergency protocols (Collins et al., 2015). However, in landscape-scale situations characterised by uncertainty, leaders face unfamiliar and poorly understood problems, making it impossible for a small group of leaders at an organisation's highest level to collect information and make decisions quickly enough to respond effectively (Howitt & Leonard, 2007). Therefore, according to Collins et al. (2015), leadership strategies can help better mobilise organisations upfront by setting clear emergency response priorities and empowering others to locate and execute solutions that serve those priorities.

Focussing on the South African context specifically, a distributed off-site work force highlighted other challenges like poverty, reliance on public transport, high cost of data and access to mobile devices, along with suitable work-from-home space etcetera

(Moonasar et al., 2021). These challenges added to the difficulty for leadership to devise and implement effective strategies to mitigate the effects of COVID-19. Adding insult to injury, the South African public were forced to deal with the burden of load shedding, as announced by Eskom, the state-owned power utility. Load shedding has been a measure introduced by Eskom to balance the electricity supply and demand (Nowakowska & Tubis, 2015). Whilst this may be an effective strategy to avoid a national black-out, the continuous power outages continue to present enormous consequences for the country (Nowakowska & Tubis, 2015). In the context of the business sector, the impact is considerable. With the transition to the digital era, as witnessed by the fourth industrial revolution (4IR), consistent and stable access to electricity is central to effectiveness.

2.3 Leadership's role in the adoption of 4IR technology

2.3.1 *Leadership*

According to Adler and Gundersen (2001), in "International Dimensions of Organizational Behavior" (pg. 158),

"Leaders help shape the organisation's vision, the meaning with which others live and work. Managers, by contrast, attempt to act completely within a vision". "Leadership and vision fundamentally shape our understanding of a people and their institutions."

Leadership's role in driving a firm's response to the changing dynamics of the global business environment, with all its prospects and challenges brought about by 4IR technology, is critical. Often, the effective direction of an organisation in today's ever-changing environment requires the organisation's mission, identity, and strategies to be reconsidered (Aregbeshola et al., 2011).

To remain effective, leaders need to comprehend the global landscape in the context of 4IR and the multitude of forces that can influence success (Jain et al, 2021).

Leading in an organisation that values innovation and the need for change through the incorporation of digital skills and the adoption of technology is what these leaders must embrace and ultimately drive (Singh and Goyal, 2020). These leaders recognise that resources and strategies are essential for success and that the traditional leadership outlook needs to evolve in the context of a global 4IR-driven economy (Aregbeshola et al., 2011).

Additionally, research supports the idea that a growth mindset can help leaders be more effective in their roles, particularly during uncertain times. For example, a study by Dweck and Leggett (1988) found that individuals with a growth mindset were more likely to seek out and embrace challenges, while those with a fixed mindset were more likely to avoid them.

2.3.2 *Leadership Strategies*

Wrede et al. (2020) posit that leadership must inculcate digitalisation and the use of 4IR technologies into general strategies to ensure the organisation remains competitive as they advance into the future. This inculcation is further solidified through leadership's adoption of technology and participation in digital transformation efforts by personally engaging with technology and spearheading the necessary change (Wrede et al., 2020). It is important to remember that an organisation's leadership comprises people, and people often naturally resist change if that change threatens what they perceive the intrinsic identity of the organisation to be (Venus et al., 2019). For this reason, an organisation's leadership must first accept and adopt digitalisation before spearheading an organisation's digital transformation effort.

Leadership strategies are executed throughout an organisation at every level, and it is therefore critical that they are clearly articulated, empowering, and aligned with the overall vision for the organisation (Rowe, 2001). Consequently, it is important for

leaders to have a clear understanding of their organisation's vision, mission, and values, as well as the external environment in which they operate (Kotter, 1996). Additionally, leaders should also be aware of the different leadership styles and approaches that can be used to implement their strategies (Hersey & Blanchard, 1969; Bass, 1985).

Furthermore, effective leadership strategies should also consider the different stakeholders within the organisation, such as employees, customers, shareholders, and suppliers (Freeman, 1984). This requires leaders to understand the different needs and expectations of these stakeholders and to communicate their strategies in a way that is inclusive and empowering for all (Stakeholder theory by Freeman, 1984).

2.3.3 *Proposition 1*

Leadership is integral in driving an organisations adoption of 4IR technologies.

2.4 The Impact of 4IR Technology on Leadership Strategies

2.4.1 *4IR Technologies*

Digitisation is simply converting information from its analogue form to digital data, while digitalisation describes the broader suite of conversions and modifications required to make each digitisation process work (Armstrong et al., 2022). Armstrong et al. (2022) further suggest that digitalising can be better described as the *"reconceptualisation and reconfiguration of processes and systems*" from analogue forms to enhanced digital forms. Said differently, the digital transformation of an organisation's processes and systems.

Xu et al. (2018) describe the various industrial revolutions as a series of events that each build and improve upon on progression from the previous industrial revolution, thus leading to more robust and advanced production methods. This notion is easily demonstrated when considering that the first industrial revolution was effectively the move away from an agrarian and handicraft economy to a mechanised

manufacturing-driven economy (Xu et al, 2018). From this point, the introduction of oil as fuel as well as electricity further expounded upon this mechanised economy and facilitated production on a mass scale. The third industrial revolution took advantage of information technology which enabled the automation of the mass mechanised production economy (Xu et al., 2018), which according to Schwab (2017), brought us to the Fourth Industrial Revolution. The Fourth Industrial Revolution (4IR) refers to a world where people take advantage of connected and connecting technologies to seamlessly and frequently move between the physical reality of where they live, eat, sleep, and breathe, and the online environments where they learn, shop, get entertained, and work (Schwab, 2017; Xu et al., 2018).

The technologies emerging as the front runners in today's Fourth Industrial Revolution are additive manufacturing, robotics, Artificial Intelligence, the Internet of Things (IoT), Cloud computing, Big Data and Analytics, and Blockchain (Agbehadji et al., 2021). Armstrong et al. (2022) suggest that the interplay of Artificial Intelligence (AI) the Internet of Things (IoT), Big Data, and is what is fuelling the 4IR, and they affectionately coin this concept as the 'Virtuous Triangle'.

The adoption and use of the above-listed 4IR technologies, or combinations thereof, according to Agbehadji et al. (2021), are enabling the creation of entirely new markets and, in certain instances, completely transforming existing markets. A non-exhaustive list of some of these unique and market-changing dynamics are content streaming services like Netflix, Showmax and Spotify, which altered the way people consume audio and video content, and resource sharing services like Airbnb and Uber, which demonstrate how 4IR technologies have completely transformed existing services into something completely new (Wrede et al., 2020).

2.4.2 *Technology and Leadership*

As acknowledged by Verhoef et al. (2021), industries in their entirety are being morphed as a direct result of the adoption of 4IR technologies and the 'digital revolution' in general. Technology has changed the way organisations operate, the environment in which they operate and the processes they employ for effective operation (Cortellazzo et al., 2019).

Augmented customer expectations and changes in engagement behaviour are applying pressure to tried and tested business models and challenging their very foundation (Verhoef et al., 2021). In the same way, according to the Harvard Business Review Analytic Services report (2017), technology and its adoption is forcing a change in leadership strategies for them to be effective.

There are four critical reasons for an organisation to participate in technological or digital transformation, namely: a) to improve how business is performed by optimising processes through digitisation, b) to define what business to perform through the introduction of new, or enhance existing, products and services by employing new technologies, which often presents opportunities in entirely new markets, c) to create more value through defining new and optimal business models, and d) to advance the corporate responsibility agenda in recognising that profit is only one of a few key performance measures and that being a positively contributing corporate citizen in the 4IR is important (Armstrong et al., 2022).

To this end, it would be unfair to say that the leadership teams and their strategies are now redundant. However, these leaders must quickly recognise that the 4IR will affect them, and they should adapt accordingly (McAfee et al. 2014). Furthermore, McAfee et al. (2014) suggest that the function of leadership and leadership strategies within an organisation is going to transform, and these same leaders must

reflect on where, within the organisation, they add value and where they, along with their strategies are impediments to the desired outcomes.

Within the context of the South African financial services sector, Matsepe et al. (2022) infer that the organisations' leadership is a powerful determining factor in driving the adoption of 4IR technologies. Senior executives are crucial in articulating and adopting the 4IR technologies required within South African financial services organisations (Matsepe et al., 2022). Furthermore, Matsepe et al. (2022) posit that employees in organisations could be motivated to employ Artificial Intelligence (AI), Big Data and Analytics, and Machine Learning (ML) to tackle complex business problems, thus further reinforcing the rate of 4IR technology adoption in South African financial services companies.

2.4.3 *Proposition 2*

4IR technology drives rapid change in and to markets resulting in a change in leadership strategies becoming a requirement.

2.5 4IR Technology as a Driver of MFS in South Africa

2.5.1 *Mobile Financial Services and Technology*

As stated in the GMSA's State of the Industry Report on Mobile Money 2021, Mobile Financial Services (MFS) is effectively the use of mobile phones, phablets, and tablets as a conduit to access and engage financial services. Engagement with financial services on a mobile phone could be both transactional and non-transactional. Transactional mobile financial services include purchasing financial services using the mobile device, while non-transaction mobile financial services could simply be accessing and viewing financial information on a mobile device. Mobile money, mobile microinsurance, mobile credit and mobile payments are all examples of mobile financial services.

MFS has become increasingly popular in recent years, particularly in developing countries where access to traditional financial services is limited (Gates Foundation, 2017). In South Africa, for example, MFS has been instrumental in increasing financial inclusion for individuals and small businesses, particularly those in rural areas (PWC, 2020).

The use of MFS has been driven by advancements in mobile technology, including the widespread adoption of smartphones, and the availability of affordable data (State of the Industry Report on Mobile Money, GMSA, 2021). This has enabled financial service providers to offer a wide range of services through mobile platforms, such as account opening, money transfer, and bill payments (PWC, 2020).

Mobile money as an industry is also facilitating many additional contiguous mobile financial services like insurance, credit and savings that contribute towards easing the financial vulnerabilities of much of the world's low-income populations (State of the Industry Report on Mobile Money, GMSA, 2021). According to the State of the Industry Report on Mobile Money, there are 5.2 billion mobile device users across the globe, of which 1.2 billion have registered mobile money accounts. Of the 1.2 billion registered mobile money accounts globally, roughly 300 million are active monthly (State of the Industry Report on Mobile Money, GMSA, 2021). Therefore, it is clear that mobile money and financial services have a vital role in improving financial inclusion across the globe, particularly in a developing nation like South Africa.

Mobile financial services could also be categorised as Fintech services as, according to Demirguc-Kunt et al. (2018), the provision of financial services through mobile phones is considered Fintech. The World Bank (2018) suggests that financial services are not available to many people primarily due to access, or lack thereof

(Demirguc-Kunt et al., 2018). However, mobile financial services could facilitate a reduction in this financial services access gap.

MFS has also been seen as a potential solution to address financial crimes such as money laundering and terrorist financing (World Bank, 2020). The use of mobile technology in financial services has allowed for real-time monitoring of transactions and identification of suspicious activity (World Bank, 2020). However, there are also challenges associated with MFS, including regulatory compliance, security concerns, and competition from non-traditional players such as technology companies (PWC, 2020).

Furthermore, the Fourth Industrial Revolution (4IR) and its associated technologies, such as artificial intelligence (AI), machine learning, and the Internet of Things (IoT), are driving significant improvements in customer experience (CX) across various industries, including mobile financial services (MFS). For example, a study by Kojo and Baah (2021) found that AI-based customer service significantly influenced the intention to use mobile money services in Ghana. These technologies enable MFS providers to collect, analyse, and leverage large amounts of data to better understand and anticipate customers' needs and preferences, personalize their offerings, and deliver seamless and secure services (Kojo and Baah, 2021). For instance, AI-powered chatbots can provide instant customer support and personalized recommendations (Kojo and Baah, 2021). These improvements in CX can significantly facilitate the adoption of MFS by enhancing trust, convenience, and value for customers.

It is crucial for leadership in MFS firms to stay abreast of these challenges and trends in order to remain competitive in the marketplace.

2.5.2 *Proposition 3*

4IR technology is a catalyst as well as an enabler of Mobile Financial Services.

2.6 Analytical Framework

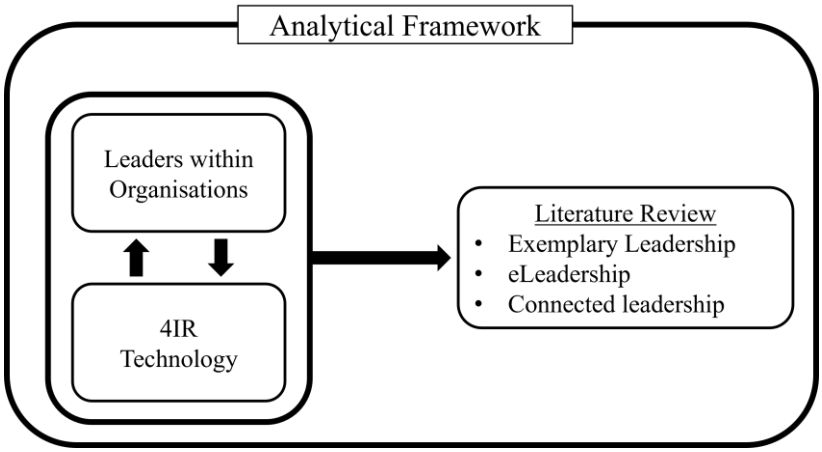


Figure 2: The Analytical Approach

(Source: adapted from https://www.linkinglearning.com)

2.6.1 *Theoretical Framework*

Leadership Theories

Several accepted definitions of authentic leadership exist in leadership development research (Gardner et al., 2011). However, the most commonly used description (6, 226 citations, Google Scholar, May 2022), and subsequently the one drawn upon for use in this paper, is:

"A pattern of leader behaviour that draws upon and promotes both positive psychological capacities and a positive ethical climate to foster greater self-awareness, an internalised moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering positive self-development" (Walumbwa et al., 2008, p.94).

The Five Practices of Exemplary Leadership

Underpinned by a narrative research approach, Kouzes and Posner's (2011) Five Practices of Exemplary Leadership model conceptualises that leadership is not about

personality but rather a set of ascertainable skills and abilities. The model comprises five practices and ten commitments of exemplary leadership (Kouzes & Posner, 2011).

Table 1: Kouzes and Posner's (2011) Five Practices of Exemplary Leadership Model.

1. Model the way	2. Inspire a shared vision	3. Challenge the process	4. Enable others to act	5. Encourage the heart
(a) Clarify values by finding your voice and affirming shared ideals. (b) Set the example by aligning actions with shared values.	(c) Envision the future by imagining exciting and ennobling possibilities. (d) Enlist others in a common vision by appealing to shared aspirations.	(e) Look for opportunities by taking the initiative and looking externally for innovative ways to improve. (f) Experiment and take risks by constantly generating small wins and learning from experience.	(g) Foster collaboration by building trust and facilitating relationships. (h) Strengthen others by increasing self-determination and developing competence.	(i) Recognize contributions by showing appreciation for individual excellence. (j) Celebrate the values and victories by creating a spirit of community.

e-Leadership

Annunzio (2001) paints a picture of a brave new world of business in the digital economy. A business landscape that is fast changing because of the adoption of technologies among other drivers.

Annunzio (2001) posits that for executives to lead their organisations with a good measure of success in this new digital economy, they need to employ five core steps. These core steps are:

- Accept that not all battles will be won in your favour.
- Ask the unaskable questions and speak the unspeakable truths.
- Make impactful statements about commitment to change.
- Communicate irreverently and do not stay committed to the status quo.
- Create an environment that recognises and rewards the exceptional (Heroes).

Connected Leadership

Hayward (2015) posits that by adopting a five-part framework, leadership and organisations alike can become ‘connected’ in an increasingly diverse world. The framework mentioned above comprises 1) purpose and direction, 2) authenticity, 3) devolved decision-making, 4) collaborative achievement, and 5) agility (Hayward, 2015). To expound on this framework further, the following is important to note:

- Purpose and direction refer to the organisation's clear and well-articulated strategy that includes key performance measures beyond profit.
- Authenticity suggests that leaders must be good role models by embracing the traits of honestly and openness.
- Devolved decision-making empowers those closest to customers and end users to make the necessary decisions required at a point in time.
- Collaborative achievement is essentially the focus on teamwork rather than the typical model of command and control.
- Agility refers to the organisation's ability to adapt to a fast-changing environment and ensure they have the flexibility to keep pace. Better yet, to get ahead of the curve.

Hayward (2015) further suggests that if leveraged appropriately, this five-part strategy can assist leaders in effectively navigating an environment categorised as Volatile, Uncertain, Complex, and Ambiguous or otherwise referred to as VUKA.

A VUKA environment, as described above, warrants connected leadership where power and agendas are shared rather than owned by a single leader or small group within the organisation (Hayward, 2015). In essence, and as put forward by Hayward (2015), connected leadership encourages and creates a connected organisation.

Connected leadership leverages the positive attributes of leadership models from the 1990's such as 'servant leadership' and 'ethical leadership' while serving as a natural progression from the 'distributed and complexity leadership' models of the 2000's which introduced the notion of shared leadership responsibility and decision-making, and the idea of organisational agility respectfully (Hayward, 2015). Essentially, connected leaders must be acutely aware of the goings on in their organisations and the world at large. This awareness affords leaders the best chance to become aware of trends and disruptions that may negatively or positively impact their business, informing much of the strategic decision-making required in a VUKA world (Hayward, 2015).

The landscape within which we work and operate is changing at a rapid rate. Drivers of this rapid change include workforces that are more multi-generational than ever before and the accelerated pace of globalisation because of connecting technologies. Simply put our world is becoming increasingly connected. It, therefore, stands to reason that a changing environment warrants an aligned change in leadership. As such, connected leadership theory delivers a segway to build a new kind of leadership capability, one that enables the leadership to maintain awareness of the fast-changing landscape and in so doing build connected organisations that by their very design are more adept in ambiguous environments (Hayward 2015).

2.6.2 *Conceptual Framework: Future-proof*

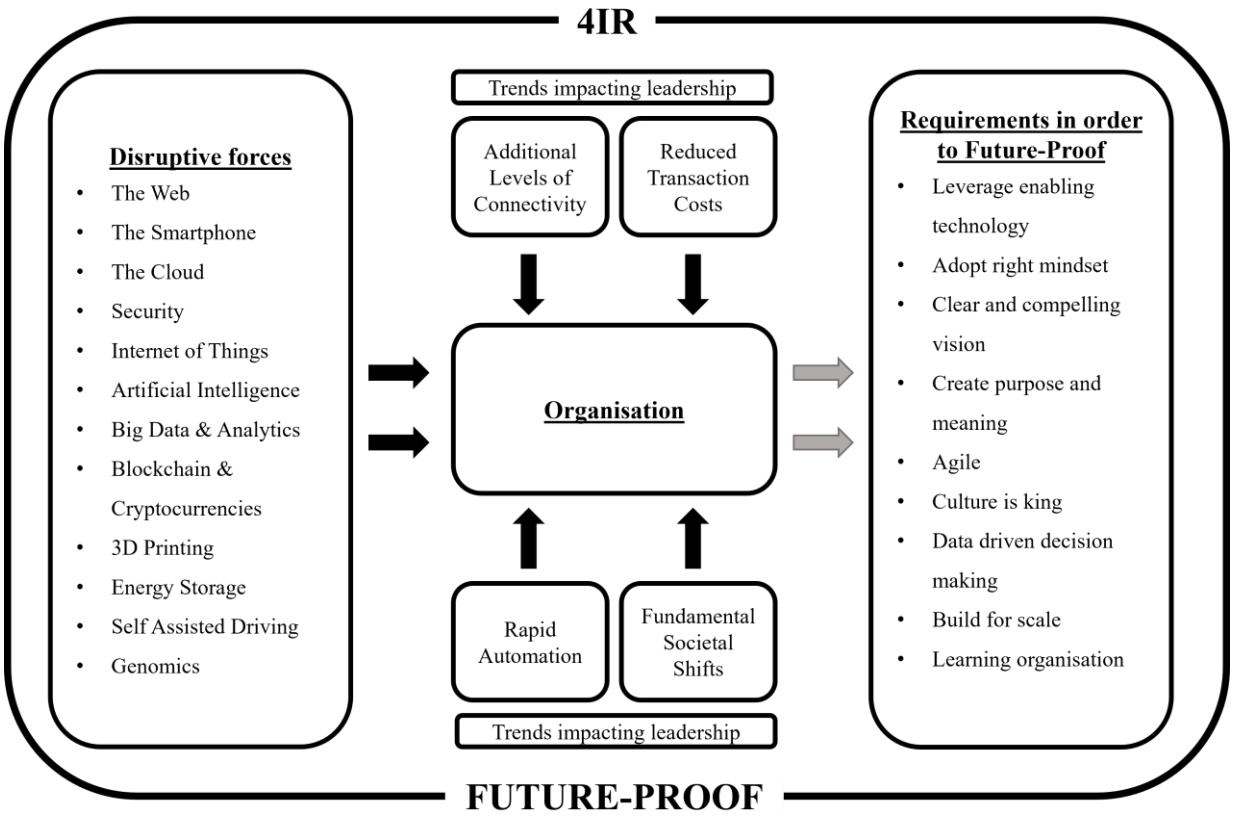


Figure 3: High-level conceptual framework

((Reference: Adapted from (Dial & Storkey, 2017) and (De Smet et al, 2021))

Future-proof

Many disruptive forces are at play in today's business landscape (Dial & Storkey, 2017). Dial and Storkey (2017) focus on those that can be divided into two themes, namely, forces on thinking and then forces that are technology-led (Dial & Storkey, 2017). These powerful forces are driving a fast and ever-changing landscape where disruption is a continuous consequence. The ability to survive and either gain or maintain a sustainable competitive advantage is becoming more and more difficult (Dial & Storkey, 2017). As Brian Solis (2011) put forward, we live in a time of digital Darwinism or, said differently, where we need to either disrupt or be disrupted (Dial &

Storkey, 2017). Therefore, leadership must ensure an organisation is prepared, which requires adopting the concept of future-proofing.

Disruption as a concept is something that leadership must, and in many instances, have accepted in today's business landscape. The below listed forces primarily drive disruption and change according to Dial and Storkey (2017):

- The Web
- The Smartphone
- The Cloud
- Security
- Internet of Things (IoT)
- Artificial Intelligence
- Big data and Analytics
- Blockchain and Cryptocurrencies
- 3D Printing
- Energy Storage
- Self/Assisted Driving
- Genomics

In addition to the forces listed above, there are certain trends that are likely to drive a change in the way an organisation's leadership engage, namely: additional levels of connectivity, reduction in transaction costs, rapid automation and fundamental societal shifts (De Smet et al., 2021).

According to Dial and Storkey (2017), a critical factor in ensuring an organisation is ready to defend against disruption or become a disruptor itself is the right mindset powered by 4IR or next-gen technologies. The leadership mindset within an organisation, along with the enabling technologies it employs, is what will aid the

organisation in future-proofing itself (Dial & Storkey, 2017). Examples of 4IR technologies that can assist organisations in future-proofing are the Internet of Things (IoT), Big Data and Analytics, Machine Learning (ML) and Artificial Intelligence (AI).

Similarly, De Smet et al., (2021) suggest that for an organisation to succeed in a 4IR future, the leadership need to consider completely new models rather than simply dusting off the old, tried and tested models previously relied upon. Key to ensuring success in the rapidly evolving and constantly changing business landscape brought about by 4IR are the following tenets: a well-defined and clearly articulated organisational vision and purpose, a clear understanding of where value is created within the organisation, an understanding that human capital and culture is an organisation's true strength, big data and analytics that enable data-driven decision making, and encourage and facilitate a learning organisation (De Smet et al, 2021).

In order to future-proof, leaders must be able to anticipate and adapt to change in the external environment and within the organisation (de Waal et al., 2020). This requires leaders to deeply understand the organisation's mission, vision, and values, as well as the external environment in which it operates (Kotter, 1996). Leaders must also be able to anticipate the impact of technological change on the organisation and its industry and understand the potential implications for the organisation's business model (Verhoef et al., 2021).

Additionally, future-proofing also requires leaders to develop a culture of innovation within the organisation, which encourages experimentation and risk-taking, as well as embracing new technologies and ideas (de Waal et al., 2020). This requires leaders to be open-minded and flexible in order to foster a culture of continuous learning and development within the organisation (de Waal et al., 2020).

In conclusion, future-proofing is becoming increasingly important in the context of the 4IR as it allows leaders and organisations to anticipate and adapt to change, ensuring long-term success.

2.7 Conclusion of Literature Review

The literature review revealed that 4IR technologies and their adoption will drive a more scientific approach to leadership by employing data and data-driven decision-making. Additionally, leaders are responsible for driving the adoption of technologies within their organisations, demonstrating an inextricable link between leadership, leadership strategies and 4IR technologies. Digital transformation and the adoption of 4IR technologies will facilitate optimised business models, streamlined systems, and digitised processes. This level of digitalisation unburdens much of an organisation's human capital from mundane, repetitive tasks allowing them to focus on what is important. Leaders will now be required to have an increased focus on more uniquely human skills while adopting the most appropriate 4IR technologies to succeed in the future. The systematic review does not reveal precisely how this change will occur. However, it does suggest that leadership and leadership strategies must adapt to be relevant in a 4IR-driven economy.

2.7.1 *Proposition 1*

Leadership is integral in driving an organisations adoption of 4IR technologies.

2.7.2 *Proposition 2*

4IR technology drives rapid change in and to markets resulting in a change in leadership strategies becoming a requirement.

2.7.3 *Proposition 3*

4IR technology is a catalyst as well as an enabler of Mobile Financial Services.

2.8 Summary of chapter

The literature review sets the scene by discussing the impact of COVID-19 on South Africa, the disruption to businesses caused by the pandemic, and the leadership response to the crisis. The review highlights the need for effective leadership in driving an organisation's adoption of Fourth Industrial Revolution (4IR) technologies, which include AI, IoT, Big Data, and Blockchain. The review recommends that leaders embrace digitalisation and 4IR technologies by personally engaging with technology and spearheading the necessary change to remain competitive. Effective leadership strategies should consider the organisation's vision, mission, values, external environment, different stakeholders, and inclusive and empowering communication. The review also provided context regarding Mobile Financial Services (MFS) and outlined how advancements in mobile technology, including the adoption of 4IR technologies, have driven MFS. The review concludes that leadership is integral in driving an organisation's adoption of 4IR technologies. Adopting these technologies is transforming industries and forcing changes in leadership strategies to remain effective.

The three propositions defined as a result of the literature review are 1) Leadership is integral in driving an organisations adoption of 4IR technologies, 2) 4IR technology drives rapid change in and to markets resulting in a change in leadership strategies becoming a requirement, and 3) 4IR technology is a catalyst as well as an enabler of Mobile Financial Services.

The theoretical framework examined three leadership theories: exemplary leadership, e-leadership and connected leadership. The conceptual framework focussed on Future-proofing as the recommended way ahead regarding leadership alignment.

CHAPTER 3. Research Methodology

Research is systematic and consists of formulating hypotheses, collecting, and analysing data (Bless et al., 2013). Research methods are procedures used to conduct research, and thus, these are used to perform research operations (Babbie, 2021). The research approach involves systematically solving the research problem, and the research method and the informing logic are applied in the methodology section (Creswell & Poth, 2018). Furthermore, the approach is directed by best fit, which means the methods must be suitable when measured against the study's objectives (Creswell & Poth, 2018).

3.1 Research Approach: Phenomenological

This study aims to uncover how individuals in leadership positions are experiencing the shift to 4IR technologies. As a result, it applies a phenomenological lens and employs a qualitative research design strategy. According to Creswell and Poth (2018), phenomenological research aims to uncover the significance of a specific event to a group of people. Hence, a phenomenological lens aligns with the objectives laid out in this study because the curiosity is on understanding the experiences of moving from conventional leadership techniques to contemporary, 4IR-driven leadership approaches from the interviewees' perspective.

Qualitative research centres on understanding processes, experiences, and the meanings people assign to things (Kalof et al., 2008). This study explores the influence of 4IR on leadership. Thus, it employs a qualitative research method because the focus is on understanding the effects of 4IR on leadership strategies from the interviewees' perspectives. This design is appropriate for this research study as the research seeks to gain a deeper understanding of the participants' individual experiences. The qualitative research method facilitates this process by enabling the participants to unpack their

lived experiences and sharing how the shift to 4IR is shaping behaviours, emotions, and influencing leadership strategies.

Qualitative research focuses mainly on understanding the detailed experiences of research participants rather than making generalised conclusions (quantitative) (Creswell & Poth, 2018). Hence, a qualitative research design will foster rich insight and understanding into leaders' different experiences in dealing with the rapid assentation and adoption of 4IR. Furthermore, the qualitative research design has adopted a phenomenological approach as it examined the uniqueness of individuals' lived experiences.

3.2 Research Design: Qualitative

The study utilises a qualitative research design. Qualitative research comprises various research methods that can include in-depth interviews, focus groups, ethnographic research, content analysis, and case study research (Creswell & Poth, 2018). The results are more descriptive, and the sentiments can be drawn quite easily from the obtained data (Kalof et al., 2008).

This study employed semi-structured interviews of individuals in leadership roles in an MFS firm in South Africa with the aim of listening to and engaging with their experiences. The interviews are used as living books and handled as literature. The nature of this study is underscored by the use of primary sources, including semi-structured interviews and secondary sources such as published journals, theses, and electronic sources.

Much of the available literature focuses on the broad experiences (quantitative data) of individuals in leadership roles in a business context during the COVID-19 pandemic, for example, the number of technology-enabled businesses. However, a

phenomenological approach will facilitate the exploration of the subjective story of each participant as its own individual and unique account (Tuffour, 2017).

Moreover, the study takes advantage of a cross-sectional approach to create a universal picture of a phenomenon at one given point in time, which requires that data is only collected once from the participants (Bezuidenhout et al., 2014).

3.3 Data collection method

The study employed semi-structured online interviews as its data collection method. Creswell and Poth (2018) state that interviews with various individuals are the primary information source collected in a phenomenological approach. This supports the use of semi-structured interviews in this study as it aligns with the research approach.

Semi-structured interviews are often applied in qualitative research and can be a constructive tool in interpretive research design to make meaning from unique subjective experiences (Braun & Clarke, 2006). This type of interviewing process assists the qualitative research process significantly as it enables the collection of in-depth data from the participants' perspectives and the gaining of clarity on their lived experiences as told by them (Balushi, 2018). Therefore, semi-structured interviews are the most applicable mode of data collection to investigate the subjective experiences of each participant in this study.

The semi-structured interviews were held on an online platform called Microsoft Teams. Microsoft Teams is a conversation-based collaborative platform for online meetings (Hubbard & Bailey, 2018). Microsoft Teams is encrypted, which means the interviews were secure, and the data is protected. The interviews were audio and/ video recorded by enabling the Teams recording functionality before each interview begins but only after the participant provided verbal consent to record. The interviews were

also be transcribed using the Teams transcription functionality allowing for written reference of each interview. Further, using an online platform eliminated travel costs and possible Covid-19 transmission.

3.4 Population and sample

The study area for this study is a Mobile Financial Services company in Johannesburg, South Africa. A total of ten participants were initially sampled using purposive sampling. Although ten participants were identified using purposive sampling, only nine of the participants were able to participate thus rendering the sample of participants to nine. The study focussed on individuals in leadership roles (Decision makers) to ensure the results embody a well-rounded representation of the MFS leadership body in South Africa. All participants in this study were full-time employees who have been in their positions before and since the emergence of COVID-19.

3.4.1 *Population*

The study will focus on senior-level leadership. All participants in this study were full-time employed individuals in leadership roles and have held these roles since before the emergence of COVID-19, as according to literature review findings, COVID-19 was a direct catalyst in the accelerated adoption of 4IR technologies. All participants were over the age of 18.

Table 2: Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
Currently employed	Not currently employed
Duration of employment must include a minimum of +3 years of leadership experience	Individuals with less than 3 years of leadership experience

Inclusion Criteria	Exclusion Criteria
Participants based in South Africa	Individuals not based in South Africa
Individuals employed in the field of Mobile Financial Services (MFS)	Individuals not employed in the field of Mobile Financial Services (MFS)
Access to internet	No access to internet

3.4.2 *Sample and sampling method*

A total of nine participants were sampled using purposive sampling. Purposive sampling was used to select participants for the study, which according to Bezuidenhout et al. (2014), means that participants were chosen according to the predefined inclusion criteria decided upon in the research design element of the study. Consequently, the sampling selection was controlled.

3.5 The Research Instrument

This study employed semi-structured interviews as its research instrument. Semi-structured interviewing is designed to elicit a vivid picture of the participant's perspective on the research topic and is an optimal tool for collecting data on individuals' perspectives and experiences (Babbie, 2021). Hence, it aligns with this study's objective of understanding leaders' experiences concerning 4IR's influence on leadership strategies. The semi-structured interviewing process holds that the participants are experts, and the interviewer is there to learn from them (Kvale, 1996). Consequently, the interviewing technique encourages participants to share everything they know about the research topic to gain their understanding (Babbie, 2021) (See Appendix C).

3.6 Procedure for Data Collection

This study made use of semi-structured interviews of individuals in leadership roles with the aim of listening to and engaging with their experiences. The interviews were used as living books and handled as literature. The nature of this study is

underscored by the use of primary sources, including semi-structured interviews and secondary sources such as published journals, theses, and electronic sources.

Much of the available literature focuses on the broad experiences (quantitative data) of individuals in leadership roles in a business context during the COVID-19 pandemic, for example, the number of technology-enabled businesses. However, a phenomenological approach will facilitate the exploration of the subjective story of each participant as its own individual and unique account (Tuffour, 2017).

Moreover, the study utilised a cross-sectional approach to create a universal picture of a phenomenon at one given point in time, which requires that data was only collected once from the participants (Bezuidenhout et al., 2014).

Questions were posed in a neutral tone, and particular attention was be paid to participants' responses. Where necessary, participants were probed, and asked follow-up questions based on their responses. To avoid bias, participants were not asked leading questions nor encouraged to provide particular answers. To manage this, Babbie (2021) comments that there should be no expression of verbal or nonverbal cues which participants could regard as approval or disapproval of what they say during the interview process.

3.7 Data Analysis Strategies and Interpretation

The study employed thematic analysis to analyse the data. Thematic analysis is a qualitative data analysis method typically applied to texts, such as transcripts or interviews (Braun & Clark, 2022). Since the study addresses specific research questions, it utilised a theoretical thematic analysis rather than an inductive approach.

Consequently, every piece of text was not coded, but each data segment relevant to the research questions was coded. Further, the study made use of open coding, which

means it did not have pre-set codes but developed and modified them during the coding process (Braun & Clarke, 2022).

Using thematic synthesis, the results from all nine participants were combined in a three-stage process, including (a) line-by-line coding of the results, (b) organising of codes to create descriptive themes, and (c) closely examining the data to identify common themes, topics, ideas, and patterns of meaning that come up repeatedly (Creswell & Poth, 2018).

This data analysis mode made sense of the data's collective patterns of meaning and experiences (Braun & Clarke, 2022). Moreover, the study will follow Braun and Clarke's (2022) six steps for conducting a thematic analysis.

Table 3: Braun and Clarke's (2022) Thematic Analysis Six Step Guide.

Braun and Clarke's Six Steps	Procedure
Step 1: Become familiar with the data	The first step is reading and re-reading the transcripts. Hence, before further steps are taken, there will be familiarity with the entire body of data or data corpus (i.e., all the interviews and any other data used). In addition, notes will be taken of early impressions at this stage.
Step 2: Generate initial codes	In this phase, organising the data in a meaningful and systematic manner will begin using coding to reduce surplus data into manageable fragments of meaning.
Step 3: Search for themes	Braun & Clarke (2006) state that there are no hard and fast rules about what makes a theme. That said, themes refer to patterns

Braun and Clarke's Six Steps	Procedure
	that capture something significant or interesting about the data regarding the research questions. This study anticipates a relatively small data set, and as a result, there may be considerable overlap between the coding stage and this stage of identifying initial themes. In that case, the codes will be examined and collated into a preliminary theme.
Step 4: Review themes	In this phase, a review, modification, and the development of the initial themes identified in Step 3 will be carried out. For example, the data associated with each theme will be colour-coded to simplify thematic analysis. Further, a decision will be made on collating, refining, or removing irrelevant pieces based on whether they make sense.
Step 5: Define themes	Step 5 is the final refinement of the themes. The aim is to identify its critical aspect (e.g. what is at the theme's core). This phase is also concerned with sub-themes, especially how they interact with and relate to each other and to the central theme. Accordingly, the themes will be refined, defined, and functional and potential sub-themes will be named in this stage.

Braun and Clarke's Six Steps	Procedure
Step 6: Write-up	An article, dissertation or report is typically the last phase of the research process. Accordingly, the final research report will conclude this study phase, including written interpretations of the results.

3.8 Possible Limitations and Challenges of the Study

According to Creswell and Poth (2018), qualitative research approaches may occasionally overlook contextual sensitivities and focus more on symbolic meanings and understanding experiences. In addition, smaller sample sizes, such as nine participants, may be interpreted as too low a marker (i.e., low credibility) to inform guideline change as it brings into question the issue of generalisability to the whole population of the research segment. Data interpretation and analysis also may be more complex in a qualitative approach (Bezuidenhout et al., 2014).

3.9 Quality Assurance

3.9.1 *Transferability*

Transferability shows that the findings apply to other contexts. In phenomenological research, the goal is to describe a phenomenon's universal structure (Braun & Clark, 2006). However, because this study explored a unique phenomenon, it is not expected that the findings will transfer to other phenomena. Still, individuals in leadership positions who share similar 'lived experiences' or contexts should be able to recognise familiar patterns in the descriptions of the study outcomes.

3.9.2 *Credibility*

Credibility refers to the trust in the validity of the findings. In phenomenological research, 'truth' is an accurate model or description of the universal structure of participants' lived experiences (Braun & Clarke, 2006). To ensure research credibility, this study employed (a) persistent observation by leveraging semi-structured interviews with leaders, asking open-ended questions about their experiences while simultaneously observing leadership practices first hand. By combining interview data with direct observations deeper insights were gained, (b) triangulation of data occurred by examining additional research over and above the data collected via the semi structured interviews. Cross verification occurred by comparing and contrasting data from interviews, research, and observations, and (c) peer debriefing, as explained by Bezuidenhout et al. (2014).

3.9.3 *Dependability*

Dependability refers to rigorous and organised research practices (Bezuidenhout et al., 2014). The methodological approaches selected for this study involved clearly stated and organised research procedures. Moreover, the research supervisor, Dr Manamela Matshabaphala, reviewed the research approaches at various phases to ensure consistency between the proposed methods and research activities.

3.9.4 *Conformability*

Conformability refers to the degree to which others agree or corroborate with the research findings (Braun & Clarke, 2006). It is equivalent to objectivity, the extent to which a researcher is aware of or accounts for individual subjectivity or bias. Confirmation can help assure interpretation of the findings with respondents, which is called respondent validation. Triangulation of results with data from various sources and methods can also help confirm the validity of the interpretation (Bezuidenhout et

al., 2014). While every qualitative study is unique, documenting the procedures and rechecking the data to unearth contradictions and negative instances can help ensure conformability (Creswell & Poth, 2018). To ensure auditing is possible, all data from this study will be well-organised and retrievable so as to be available to appropriate parties should the findings be challenged.

3.10 Ethical considerations

Ethics is an essential component of the research process. Fouka and Mantzourou (2011) assert that protecting the dignity of research participants is central to research ethics. Hence, participants were entitled to withdraw from the study anytime, without obligation to continue or needing to provide any reason for their choice (Akrananga & Makau, 2016). The research subjects were informed that their refusal to engage in the study, at any point, would not have negative consequences (Akrananga & Makau, 2016). All participants were informed and provided with consent forms highlighting all the research particulars and briefing them about the benefits, risks, and funding involved in the study (Akrananga & Makau, 2016).

The research study was conducted via semi-structured interviews. Therefore, anonymity cannot be assured (Govil, 2013). However, confidentiality was and is highly prioritised (Akrananga & Makau, 2016).

Furthermore, all participants have the right to privacy. Hence, all their data is stored in safe password-protected files, ensuring nothing can be exposed. Per Pedersen (1989), the study is also bias-free and does not discriminate against anyone based upon their culture, religion, ethnicity, or personal beliefs.

As is inherent in social research, certain questions can be thought-provoking and personal. Thus, it was imperative to consider all possible sources that may harm participants, particularly psychological harm. Even though this study was deemed to be

of minimal risk by the Wits Business School Research Panel indicating little chance of participant harm or discomfort, this study endeavoured not to cause any harm to participants, potential risks were disclosed (to participants) prior to the semi-structured interviews commencing.

Moreover, participants were linked with various support systems to assist them in mitigating any potential harm that may unintentionally result from participating in the study. Numbers provided for assistance were The South African Depression and Anxiety Group (SADAG) at 011 823 4837 and Suicidal Emergency at 0027 51 444 5000 ("free telephone counselling hotline in South Africa", 2022). These can assist any participle feeling overwhelmed, depressed, or triggered due to speaking about a loss or other traumatic events that may be linked with Covid-19. Participants can then contact and seek help through these numbers.

Furthermore, they were also provided with the Covid-19 hotline number for any questions or help they might need regarding the Covid-19 virus at 0800 029 999. All numbers were shared with the participants before conducting the interview. If participants felt they could not continue the interview, they had every right to decline to answer any further questions and to stop the interview at any given moment.

The study was conducted on individuals in leadership positions at a Johannesburg based Mobile Financial Services Provider. Since there will be no identifying data relating to the companies that employ the participants, a request for interview approval or consent from the company was not required. The consent forms were issued directly to individual participants.

The study assumed a "dominant approach" to protect participants' privacy, in which all data was collected and analysed without compromising their identity (Sieber,

1992). Furthermore, per Baez (2002), it employs a convention of confidentiality so that every participant's confidentiality can be assured.

The study also complies with the POPI standards (De Bruyn, 2014), The Protection of Personal Information Act (Act No. 4 of 2013), known as the POPI Act1, South Africa's primary data privacy law. The purpose of the POPI Act1 is to give effect to the right to privacy afforded by the Constitution of South Africa by protecting the personal information of individuals from misuse (Stats SA, 2021).

A summary of the ethical procedures of the study was conducted by obtaining appropriate permission from necessary authorities (this research is for people older than 18 and thus did not require assent from guardians). Consent forms were made available and given to the participants. A debriefing session took place before the interviews commenced to give the participant's a more detailed understanding of the research and to address any potential risks and their rights in the process.

3.11 Summary of research methodology

This study used qualitative research design to gather descriptive data and sentiments from nine individuals in leadership roles in an MFS firm in South Africa. The study focused on exploring the subjective experiences of each participant, taking a phenomenological approach. Semi-structured online interviews were used as the data collection method, and thematic analysis was used to analyse the data. The study followed ethical guidelines to protect the participants' privacy and dignity. The study's small sample size and the potential complexity of qualitative data analysis were discussed. The study aimed to gain a subjective understanding of the experiences of individuals in leadership roles concerning 4IR's influence on leadership strategies.

CHAPTER 4. Presentation of Findings

The purpose of this chapter is to present the findings from the data collected in the semi-structured interviews conducted with the participants of the study.

4.1 Introduction

The findings of the semi-structured interviews conducted with key stakeholders in an MFS firm in South Africa will be presented and described with the inclusion of direct quotations from the participants. The findings have been extracted during the data mining process of the transcripts and will categorised as per the various themes that emerged in relation to the three propositions. Table 4 below shows the emergent themes related to each proposition.

Table 4: Propositions and emergent themes

Proposition	Emergent themes
Prop 1: Leadership being integral in driving an organization's adoption of 4IR technologies	• Leaders' readiness to adopt 4IR technology • Leaders' mindset
Prop 2: 4IR technology driving rapid change in and to markets resulting in a change in leadership strategies becoming a requirement	• 4IR brings additional complexity • Leaders must be tech-savvy
Prop 3: 4IR technology being a catalyst as well as an enabler of Mobile Financial Services	• Access • Customer experience

4.2 Findings pertaining to proposition 1

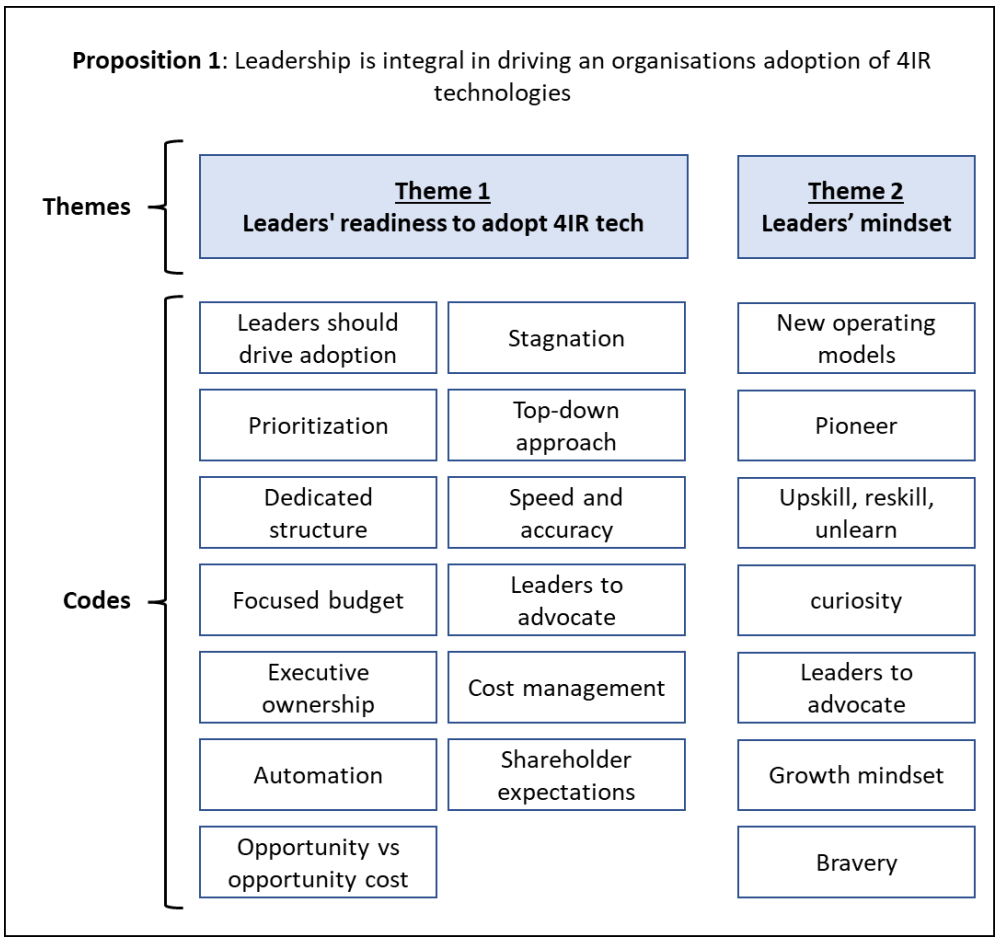


Figure 4: Proposition 1 with associated codes and themes

Two primary themes emerged while mining the data from the interviews regarding the first proposition that posits that leadership is integral in driving an organisations adoption of 4IR technology. The data points drawn from the transcripts of the interviews culminate in the following two themes: 1) Leaders' readiness to adopt 4IR technology and, 2) Leaders' mindsets.

4.2.1 *Leaders' readiness to adopt 4IR technology*

There was consensus among all leaders interviewed that the adoption of 4IR and its associated technology is heavily contingent on leaders within an organisation driving

the adoption. Data collected from the leaders interviewed show their collective agreement to leaders being ready and willing to adopt 4IR technology.

Three participants answered with a focus directly on leadership driving the adoption of 4IR technology while another three participants felt that beyond driving the adoption of 4IR technology, the overall weighting and focus of 4IR technology adoption should be lifted with the organisation.

4.2.2 *Leaders' mindset (growth or not)*

The second theme that emerged from the data collected in the interviews with leaders was that of leaders being willing to do things differently. Participants shared that they felt leaders today need to become more comfortable with doing things differently and become more comfortable with technology.

Participants also felt that it is important for leaders to step outside of their existing industries and take note of what's happening more broadly to be aware of advancements in technology and to become more comfortable with 4IR in general.

4.2.3 *Conclusion for proposition 1*

Regarding the first proposition that leadership is integral in driving an organisation's adoption of 4IR technology, the findings revealed that there is consensus among the participant interviewed that leaders need to drive the adoption of technology within an organisation. Some respondents up weighted the importance of leaders driving the adoption of 4IR technology by suggesting that dedicated departments and budgets be allocated to piloting and adopting new technology.

Similarly, the notion that leaders need to be willing to adopt a different way of working and show curiosity broader than their existing area of focus to understand and become more comfortable with 4IR technology and its different applications was revealed in the findings.

4.3 Findings pertaining proposition 2

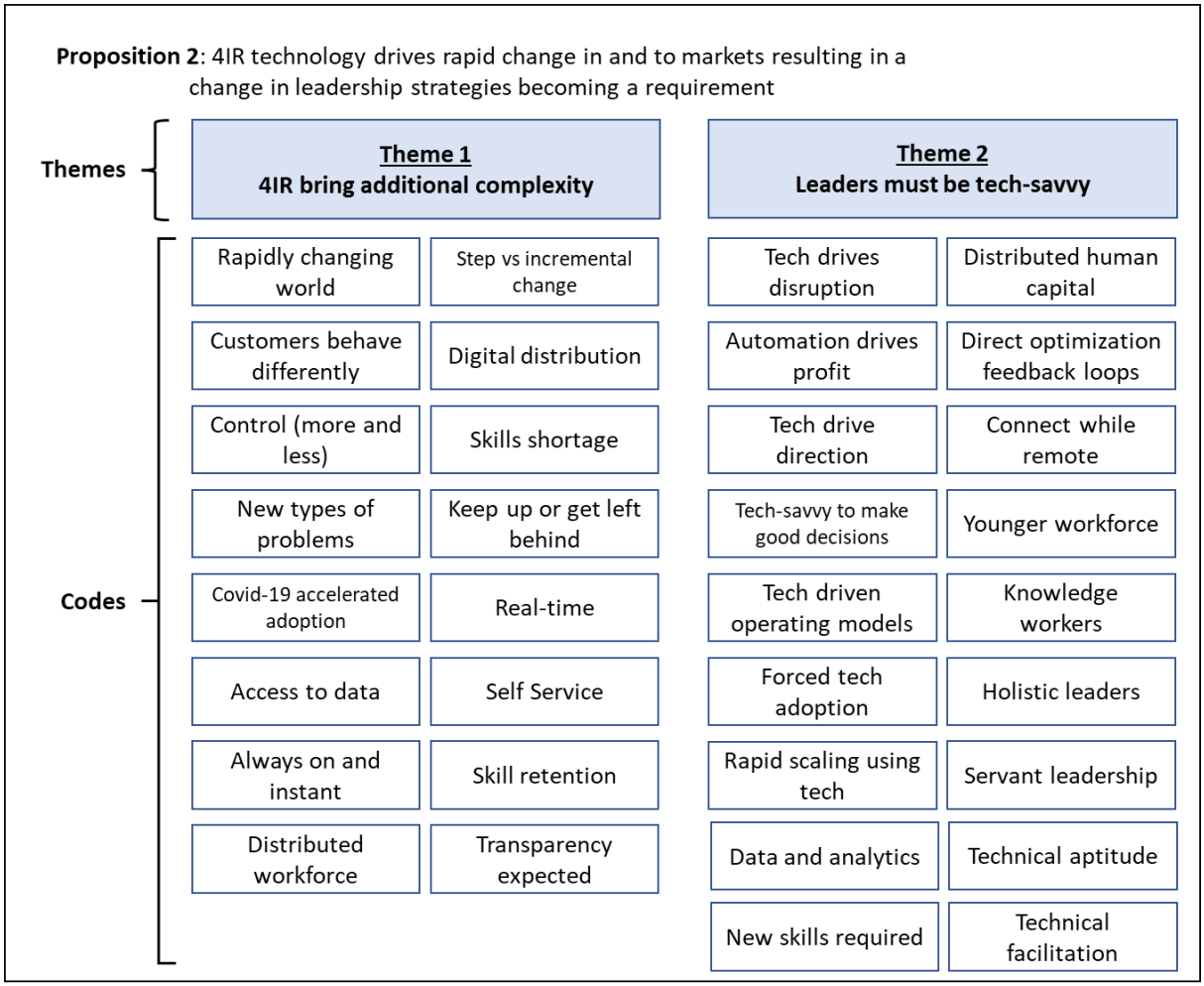


Figure 5: Proposition 2 with associated codes and themes

The emergent themes as an outcome of the data mining from the interviews regarding the second proposition that suggests that 4IR technology drives rapid change in and to markets resulting in a change in leadership strategies becoming a requirement. The data points drawn from the transcripts of the interviews culminate in the following two themes: 1) 4IR brings additional complexity and, 2) Leaders must be tech-savvy.

4.3.1 *4IR brings additional complexity*

The findings presented a shared view among the leaders interviewed that 4IR technology has introduced additional complexity to the world of work. A few of the participants cited Covid-19 as a catalyst for the adoption of 4IR technology, and as this was essentially forced adoption, complexity increased instantly, forcing leaders to catch up. The leaders interviewed also highlighted the added complexity brought about by 4IR technology and provided examples of said added complexity spanning the introduction of new channels of engagement, process reengineering aligned with relevant technology and the fact that the very nature of problems is changing as a result of 4IR technology adoption.

4.3.2 *Leaders' must be tech savvy*

The second theme that emerged was that leaders need to be tech-savvy. Much of the findings leaned towards this theme, as is evident by the participants' responses. The overall skill shortage regarding 4IR technologies was also highlighted, adding credence to the notion that leaders need to be tech-savvy in today's business landscape.

Participants made specific reference to skill shortage and the difficulty leaders face in attracting the right skills and retaining them.

Many of the participants also highlighted how the use of 4IR technology can result in better business outcomes that are essential in today's Fourth Industrial Revolution including the value 4IR technology can deliver, further driving the importance of leaders being tech-savvy.

The importance of leaders understanding technology and how technology impacts people in business was also raised by participants.

The participants, who are all leaders within the MFS business themselves, were also open enough suggest some gaps and risks associated with the level of tech-

savviness leaders hold in the fourth industrial revolution. These gaps and risks include experiential gaps, operating models being structured around leaders instead of completely new models being created, cost control in a digital world is not well understood by many leaders, and a general failure to relate with younger knowledge workers.

4.3.3 *Conclusion for proposition 2*

Regarding the second proposition which states that 4IR technology is driving rapid change in and to markets resulting in a change in leadership strategies becoming a requirement, the findings revealed that the participants acknowledge a skill shortage relating to 4IR technologies as well as the challenge in retaining the skill once acquired.

The participants also agreed that 4IR and its associated technologies bring with it an increased level of complexity that leaders need to navigate while ensuring they themselves have the requisite level of tech-savviness to be effective.

4.4 Findings pertaining proposition 3

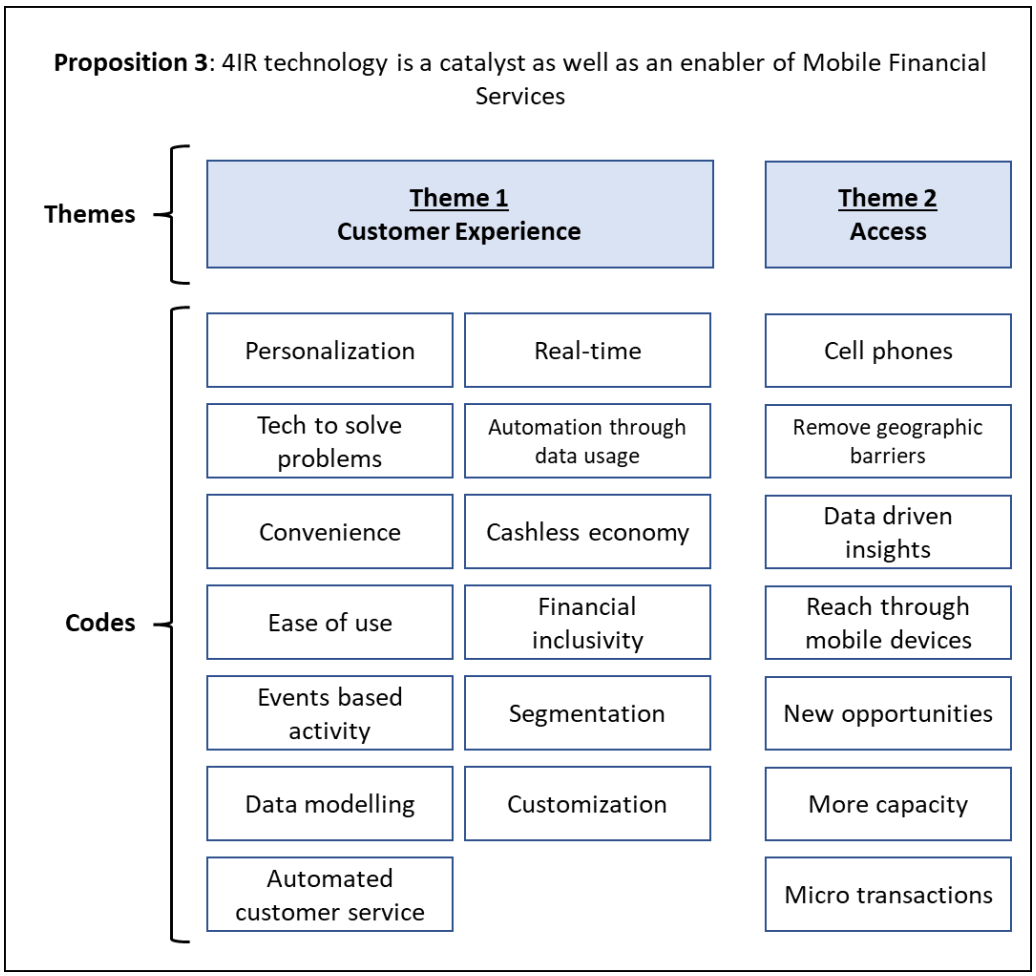


Figure 6: Proposition 3 with associated codes and themes

Regarding the third proposition that positions 4IR technology as being a catalyst as well as an enabler of Mobile Financial Services. The data mined yielded the following two themes: 1) Access and 2) Customer Experience (CX).

4.4.1 *Access*

The theme of access is irrefutable when looking at the responses of the participants of the study about how 4IR technology is facilitating and enabling Mobile Financial Services in South Africa. While mobile devices bridge a large part of the access to financial services challenge, it's clear that 4IR technologies also play their part

in facilitating access to MFS in South Africa. Participants explicitly spoke about technology and devices bridging access challenges to MFS.

The idea of access goes beyond physical access to products and services to the creating of products and services that are not even conceivable today. The application of 4IR technology is likely to produce such ‘unconceived’ solutions which by their very nature will connect people and business in a way that further progresses MFS. Needless to say, this is a double-edged sword in that opportunity and risk are inherently coupled, thus the propensity for increased risk is also likely.

4.4.2 *Customer experience*

In considering 4IR and its associated technologies as an enabler and catalyst of MFS, the interviewed leaders widely adopted the theme of customer experience. Customer experience, and the change thereof, was considered as both a consequence and a driver in using 4IR technology in the MFS domain.

Participants spoke of how CX will be transformed due to MFS leveraging 4IR technologies, an example of which is the notion of leveraging rich data sets to provide events based or trigger-based insurance at a meaningful level.

Participants also highlighted the value 4IR tech can add to creating world-class customer experiences through truly personalised offers and experiences and thus driving MFS.

4.4.3 *Conclusion for proposition 3*

Regarding the third proposition that 4IR technology is a catalyst and an enabler of Mobile Financial Services, the findings show that mobile devices bridge much of the access to financial services challenge. At the same time, 4IR technologies also play their part in facilitating access to MFS in South Africa.

The findings also illustrate that yet-to-be-conceived solutions may resolve access challenges, as 4Ir technologies promote step change rather than incremental change.

Customer experience was also widely considered a consequence and a driver of using 4IR technology in the MFS domain. Participants noted that CX would be transformed because of 4IR technology.

4.5 Summary of the findings

The findings from the semi-structured interviews held with the participants are broken down as per the themes that emerged for each of the three propositions.

4.5.1 *Proposition 1 - Leader's readiness to adopt 4Ir technology and Leaders' mindset*

Regarding the first proposition that leadership is integral in driving an organisation's adoption of 4IR technology, the findings revealed that there is consensus among the participant interviewed that leaders need to drive the adoption of technology within an organisation. Some respondents up weighted the importance of leaders driving the adoption of 4IR technology by suggesting that dedicated departments and budgets be allocated to piloting and adopting new technology.

Similarly, the notion that leaders need to be willing to adopt a different way of working and show curiosity broader than their existing area of focus to understand and become more comfortable with 4IR technology and its different applications is revealed in the findings.

4.5.2 *Proposition 2 - 4IR brings additional complexity and Leaders must be tech-savvy*

Regarding the second proposition, which states that 4IR technology is driving rapid change in and to markets resulting in a change in leadership strategies becoming a

requirement, the findings revealed that the participants acknowledge a skill shortage relating to 4IR technologies and the challenge in retaining the skill once acquired.

The participants also agreed that 4IR and its associated technologies bring an increased level of complexity that leaders need to navigate while ensuring they have the requisite level of tech-savviness to be effective.

4.5.3 *Proposition 3 - Access and Customer experience*

Regarding the third proposition that 4IR technology is a catalyst and an enabler of Mobile Financial Services, the findings show that mobile devices bridge much of the access to financial services challenge. At the same time, 4IR technologies also play their part in facilitating access to MFS in South Africa.

The findings also illustrate that access challenges may be resolved by not yet conceived solutions, as 4Ir technologies promote step change rather than incremental change.

Customer experience was also widely considered as both a consequence and a driver of using 4IR technology in the MFS domain. Participants noted that CX would be transformed because of osition4IR technology.

CHAPTER 5. Discussion of the findings

5.1 Introduction

This chapter discusses how the findings presented in chapter 4 are interrelated and, in many instances, aligned with the literature review and the propositions that were put forward in the literature review in chapter 2. When correlated with the literature review, the comprehension and explanation of these findings will add to the body of knowledge on the impact of 4IR and its associated technologies on leadership strategies in a South African MFS firm.

5.2 Discussion pertaining to proposition 1:

Leadership is integral in driving an organisations adoption of 4IR technologies.

The two primary themes that emerged while mining the data from the semi-structured interviews regarding the first proposition are: 1) Leaders' readiness to adopt 4IR technology and, 2) Leaders' mindsets. These themes encapsulate the importance of leaders within an organisation when it comes to the adoption of 4IR technology as well as highlight some of the challenges that leaders in the 4IR face.

5.2.1 *Leaders' readiness to adopt 4IR technology*

Recalling Adler and Gundersen's (2001) differentiation between a leader and a manager in an organisation, as stated, *"Leaders help shape the organisation's vision, the meaning with which others live and work. Managers, by contrast, act completely within a vision. Leadership and vision remain fundamental to the understanding of a people and their institutions.",* it stands to reason that, in shaping an organisation's vision and creating meaning for others, the use of technology and its adoption is an important consideration. This was further emphasised by the consensus among the participants interviewed for this study that the adoption of 4IR and its associated technology is heavily contingent on leaders within an organisation driving the adoption.

Participants also highlighted the importance of leaders being ready and willing to adopt 4IR technology in the pursuit of being effective in the 4IR, which strongly aligns with the sentiment held by Wrede et al. (2020), who posit that leadership must inculcate digitalisation and the use of 4IR technologies into general strategies to ensure the organisation remains competitive as they advance into the future. The notion of entrenching digitalisation in the organisation was also held by three participants, who felt that beyond driving the adoption of 4IR technology, the overall weighting and focus of 4IR technology adoption should be lifted with the organisation by way of dedicated budget, focussed departments, and executive sponsorship.

Three different participants applied particular focus on leaders within an organisation being directly responsible for the adoption and inculcation of new technology within the organisation. The view of these three participants stacks up with that of Wrede et al. (2020), who suggest that the inculcation is further solidified through leadership's adoption of technology and participation in digital transformation efforts by personally engaging with technology and spearheading the necessary change.

There was consensus among all leaders interviewed that the adoption of 4IR and its associated technology is heavily contingent on leaders within an organisation driving the adoption. Verbatim quotes from the leaders interviewed show their collective agreement to leaders being ready and willing to adopt 4IR technology.

5.2.2 *Leaders' mindset (growth or not)*

As highlighted in the literature review, it is important to remember that an organisation's leadership comprises people, and people often naturally resist change if that change threatens what they perceive the intrinsic identity of the organisation to be (Venus et al., 2019). This speaks directly to the mindset people hold within an organisation of which leaders are a part. For this reason, an organisation's leadership

must first accept and adopt digitalisation before spearheading an organisation's digital transformation effort. Several interviewed participants raised the point that leaders must be comfortable with ambiguity and doing things differently. One participant spoke to the notion of bravery and the requirement of leaders today to be brave, which in essence relates to leaders having a growth mindset, as research supports the idea that a growth mindset can help leaders be more effective in their roles. For example, a study by Dweck and Leggett (1988) found that individuals with a growth mindset were more likely to seek out and embrace challenges, while those with a fixed mindset were more likely to avoid them.

Most participants also highlighted that leaders need to spend much of their time and energy in different environments to learn more about how 4IR technology is being effectively applied in different environments. As expressed by Aregbeshola et al. (2011), these leaders recognise that resources and strategies are essential for success and that the traditional leadership outlook needs to evolve in the context of a global 4IR-driven economy. Thus, the sentiment of leaders stepping out of their comfort zones and comprehending the global landscape in the context of 4IR and the multitude of forces that can influence success rings true.

5.2.3 *Conclusion of discussion pertaining to proposition 1*

The discussion regarding proposition 1 highlights the importance of leadership in driving an organization's adoption of 4IR technologies. The two primary themes that emerged from the interviews were leaders' readiness to adopt 4IR technology and their mindsets. The participants emphasized that the adoption of 4IR technology is heavily contingent on leaders driving the adoption, and leaders must be ready and willing to adopt 4IR technology to be effective in the 4IR. The participants also highlighted the importance of leaders having a growth mindset and being comfortable with ambiguity,

spending time and energy learning about how 4IR technology is being effectively applied in different environments and stepping out of their comfort zones to comprehend the global landscape in the context of 4IR. The discussion reaffirms the conclusion that leadership plays a critical role in the adoption of 4IR technologies, and leaders must be ready, willing, and equipped to drive the adoption of 4IR technology in their organizations.

5.3 Discussion pertaining to proposition 2:

4IR technology is driving rapid change in and to markets resulting in a change in leadership strategies becoming a requirement

The two emergent themes as an outcome of the data mining from the interviews regarding the second proposition are 1) 4IR brings additional complexity, and 2) Leaders must be tech-savvy. The exploration of these themes highlights that 4IR technology is driving change in both the requirements of leaders and organisations alike.

5.3.1 *4IR brings additional complexity*

The findings presented in chapter 4 put forward a shared view among the leaders interviewed that 4IR technology has introduced additional complexity to the world of work, which aligns with the content presented in the literature review in chapter 2.

The idea that 4IR technology brings additional complexity should not be surprising when considering the adoption of 4IR technology, i.e., the process of digitalising the business (Armstrong et al., 2022). Armstrong et al. (2022) further clarify the difference between digitisation and digitalisation in that digitisation is simply converting information from its analogue form to digital data, while digitalisation describes the broader suite of conversions and modifications required to make each digitisation process work. Armstrong et al. (2022) further suggest that digitalising can

be better described as the *"reconceptualisation and reconfiguration of processes and* systems" from analogue to enhanced digital forms, in other words, the digital transformation of an organisation's processes and systems. Most of the participants interviewed expressed the added complexity brought about by 4IR as challenges in aligning with Armstrong et al.'s (2022) *"reconceptualisation and reconfiguration of processes and* systems' in business today.

Doing things in different ways was noted by the participants interviewed as a driver of added complexity, and entering a new era, such as the fourth Industrial revolution (Schwab, 2017), is a phenomenon that will certainly necessitate doing things differently. The Fourth Industrial Revolution (4IR) refers to a world where people take advantage of connected and connecting technologies to seamlessly and frequently move between the physical reality of where they live, eat, sleep, and breathe and the online environments where they learn, shop, get entertained, and work (Schwab, 2017; Xu et al., 2018).

Participants made mention of 4IR technology facilitating scale through automation, infinite capacity, changing engagement channels, the effective use of data, new operating models and more. This aligned with the information presented in the literature review regarding emerging technologies. The technologies emerging as the front runners in today's Fourth Industrial Revolution are additive manufacturing, robotics, Artificial Intelligence, the Internet of Things (IoT), Cloud computing, Big Data and Analytics, and Blockchain (Agbehadji et al., 2021). Armstrong et al. (2022) put forward the concept of the 'Virtuous Triangle', which is the interplay of Artificial Intelligence (AI), Internet of Things (IoT) and Big Data and suggest that it is this that is fuelling the 4IR.

The adoption and use of the above-listed 4IR technologies, or combinations thereof, according to Agbehadji et al. (2021), are enabling the creation of entirely new markets and, in certain instances, completely transforming existing markets.
The complexity brought about by 4IR, as noted by the participants of this study, aligns with the effective use and interplay of the various 4IR technologies as stated above.

5.3.2 *Leaders' must be tech savvy*

As presented in chapter 2 and as acknowledged by Verhoef et al. (2021), industries in their entirety are being morphed as a direct result of the adoption of 4IR technologies and the 'digital revolution' in general. Technology has changed how organisations operate, the environment in which they operate and the processes they employ for effective operation (Cortellazzo et al., 2019). Consequently, the interviews held with the participants of this study yielded a collected sentiment that leaders in the 4IR need to be tech-savvy to be effective, which is also supported by the Harvard Business Review Analytic Services report (2017), which states that technology and its adoption is forcing a change in leadership strategies for them to be effective.

Five participants hold strong opinions regarding the value brought about by adopting 4IR technology and hence the importance of leaders being tech-savvy enough to exploit the technology in the interest of the business. Armstrong et al. (2022) posit that there are four critical reasons for an organisation to participate in technological or digital transformation, namely: a) to improve how business is performed by optimising processes through digitisation, b) to define what business to perform through the introduction of new, or enhance existing, products and services by employing new technologies, which often presents opportunities in entirely new markets, c) to create more value through defining new and optimal business models, and d) to advance the corporate responsibility agenda in recognising that profit is only one of a few key

performance measures and that being a positively contributing corporate citizen in the 4IR is important (Armstrong et al., 2022).

To this end, and aligning with the interview findings, it would be unfair to say that the leadership teams and their strategies are now redundant; however, these leaders must quickly recognise that the 4IR will affect them, and they should adapt accordingly (McAfee et al., 2014). Furthermore, McAfee et al. (2014) suggest that the function of leadership and leadership strategies within an organisation will transform. These leaders must reflect on where, within the organisation, they add value and where they, along with their strategies, are impediments to the desired outcomes—a sentiment held by all participants interviewed as part of this study.

Within the context of the South African financial services sector, Matsepe et al. (2022) infer that the organisations' leadership is an influential determining factor in driving the adoption of 4IR technologies. Senior executives are crucial in articulating and adopting the 4IR technologies required within South African financial services organisations (Matsepe et al., 2022). A notion firmly supported by the interviewed participants. The same participants, however, expressed concern about gaps leaders may have regarding 4IR technology and its appropriate and effective adoption.

5.3.3 *Conclusion of discussion pertaining to proposition 2*

The discussion regarding Proposition 2 of the research reveals that the fourth industrial revolution (4IR) has brought additional complexity and change to organizations and leadership strategies. The adoption of 4IR technology, which includes emerging technologies such as the Internet of Things, additive manufacturing, artificial intelligence, cloud computing, big data, and analytics, is a process of digitalizing businesses, creating entirely new markets, and transforming existing markets. Leaders need to be tech-savvy to exploit the technology to benefit the business, with the

adoption of technology forcing a change in leadership strategies for them to be effective. The study's participants highlighted that doing things differently is a driver of added complexity, and 4IR technology is facilitating scale through automation, infinite capacity, changing engagement channels, the effective use of data, and new operating models. Leaders and their strategies are not redundant, instead, leaders must quickly adapt to the 4IR and its associated complexity to remain effective.

5.4 Discussion pertaining to proposition 3:

4IR technology is a catalyst as well as an enabler of Mobile Financial Services

The data collected in the participant interviews regarding the third proposition yielded two themes: 1) Access and 2) Customer Experience (CX). Further exploration into these two themes and combining the content presented in the literature review with the participants' feedback shows that access and customer experience are definitive ways 4IR technology is driving MFS.

5.4.1 *Access*

The theme of access is irrefutable when looking at the participants' responses to the study about how 4IR technology facilitates and enables Mobile Financial Services in South Africa. While mobile devices bridge a large part of the access to financial services challenge, it’s clear that 4IR technologies also play their part in facilitating access to MFS in South Africa. Three of the interview participants specifically spoke about technology and devices bridging access challenges for poorer individuals when it comes to MFS, which firmly aligns with the GMSA’s State of the Industry Report on Mobile Money (2021), which proposes that MFS is effectively the use of mobile phones, phablets, and tablets as a conduit to access and engage financial services. The Gates Foundation (2017) further supports this notion by stating that MFS has become increasingly popular in recent years, particularly in developing countries with limited

access to traditional financial services. In South Africa, for example, MFS has been instrumental in increasing financial inclusion for individuals and small businesses, particularly those in rural areas (PWC, 2020).

Further supporting the view of the participants regarding 4IR technologies being an enabler of MFS is the State of the Industry Report on Mobile Money (GMSA 2021), which posits that advancements in mobile technology, including the widespread adoption of smartphones and the availability of affordable data have driven the use of MFS. This has enabled financial service providers to offer a wide range of services through mobile platforms, such as account opening, money transfer, and bill payments (PWC, 2020).

Mobile money as an industry is also facilitating many additional contiguous mobile financial services like insurance, credit and savings that contribute towards easing the financial vulnerabilities of much of the world's low-income populations (State of the Industry Report on Mobile Money, GMSA, 2021). According to the State of the Industry Report on Mobile Money (GMSA, 2021), there are 5.2 billion mobile device users across the globe, of which 1.2 billion have registered mobile money accounts. Of the 1.2 billion registered mobile money accounts globally, roughly 300 million are active monthly (State of the Industry Report on Mobile Money, GMSA, 2021). Therefore, it is clear that mobile money and financial services have a vital role in improving financial inclusion across the globe, particularly in a developing nation like South Africa. This again speaks directly to the same viewpoint of the participants in that access to financial services, particularly MFS, is increasing because of the adoption and use of 4IR technologies.

Demirguc-Kunt et al. (2018) support that mobile financial services could also be categorised as Fintech services, as the provision of financial services through mobile

phones is considered Fintech. Much like the interviewed participants, the World Bank (2018) suggests that financial services are only available to some people primarily due to access (Demirguc-Kunt et al., 2018). However, mobile financial services could facilitate a reduction in this financial services access gap.

It is crucial for leadership in MFS firms to stay abreast of these challenges and trends if they want to remain competitive in the marketplace.

5.4.2 *Customer experience*

In considering 4IR and its associated technologies as an enabler and catalyst of MFS, the interviewed leaders widely adopted the theme of customer experience. Customer experience, and the change thereof, was considered as both a consequence and a driver in using 4IR technology in the MFS domain.

Three of the participants spoke explicitly about how customer experience (CX) will be transformed as a result of MFS leveraging 4IR technologies, which is firmly supported by Kojo and Baah (2021), who found that AI-based customer service significantly influenced the intention to use mobile money services in Ghana. These technologies enable MFS providers to collect, analyse, and leverage large amounts of data to better understand and anticipate customers' needs and preferences, personalise their offerings, and deliver seamless and secure services. For instance, AI-powered chatbots can provide instant customer support and personalised recommendations (Kojo & Baah, 2021). These improvements in CX can significantly facilitate the adoption of MFS by enhancing trust, convenience, and value for customers, which affirms the view of two of the participants, who both highlighted the value 4IR and associated technology could add to creating world-class customer experiences and thus driving MFS.

In summary, 4IR and associated technology is driving significant improvements in CX for MFS, enhancing trust, convenience, and value for customers and facilitating their adoption and usage. MFS providers and the leaders responsible need to invest in and leverage these technologies to stay competitive and deliver superior customer experiences.

5.4.3 *Conclusion of discussion pertaining to proposition 3*

Proposition 3 suggests that 4IR technology is a catalyst and enabler of Mobile Financial Services (MFS). The discussion around this proposition yielded two themes: access and customer experience. Mobile devices have facilitated access to MFS, but 4IR technology has played a significant role in enabling MFS in South Africa by offering a wide range of services through mobile platforms. The customer experience (CX) has been transformed by leveraging 4IR technologies, which enables MFS providers to collect, analyse, and leverage large amounts of data to better understand and anticipate customers' needs and preferences, personalise their offerings, and deliver seamless and secure services. These CX improvements can significantly facilitate MFS adoption by enhancing trust, convenience, and value for customers. MFS firms must invest in and leverage these technologies to stay competitive and deliver superior customer experiences. It is essential to point out that, once again, there was alignment between the views of the participants interviewed and the sentiment provided in the literature review.

5.5 Summary of the Findings discussions

The discussions surrounding all three propositions highlight the critical role of leadership in driving the adoption and effective use of 4IR technologies. Leaders must be ready, willing, and equipped to drive the adoption of 4IR technology in their organisations while having a growth mindset and being comfortable with ambiguity.

The adoption of 4IR technology has brought complexity and change to organisations and leadership strategies, and leaders need to adapt quickly to remain effective. 4IR technology is also a catalyst and enabler of Mobile Financial Services, offering a wide range of services through mobile platforms and transforming the customer experience by leveraging data to personalise offerings and deliver seamless and secure services. Overall, the discussions emphasise the importance of leaders' embracing 4IR technologies to remain competitive and ensure their organisations deliver superior customer experiences. Additionally, leaders play a crucial role in driving this transformation.

CHAPTER 6. Conclusions and recommendations

6.1 Introduction

This chapter integrates the findings and their associated discussions about each proposition with the three research questions outlined in chapter 1 and as per the below consistency table.

Table 5: Consistency table - research questions, propositions, data collection and data analysis

RQ#	Research Question	Prop #	Proposition	Data Collection Detail	Data Analysis Method
1	What is leadership's role in an organisation's adoption of 4IR technology?	**1**	Leadership is integral in driving an organisations adoption of 4IR technologies	Interview guide questions: 3, 5	Thematic analysis
2	Does 4IR technology impact leadership strategies?	**2**	4IR technology drives rapid change in and to markets resulting in a change in leadership strategies becoming a requirement.	Interview guide questions: 4, 6a, 7, 8	Thematic analysis
3	How is 4IR technology driving Mobile Financial Services in South Africa?	**3**	4IR technology is a catalyst as well as an enabler of Mobile Financial Services	Interview guide questions: 2, 6	Thematic analysis

6.2 Conclusion regarding research question 1

What is leadership's role in an organisation's adoption of 4IR technology?

Based on the research findings from this study which align with the information provided in the literature review in chapter two, leadership plays a critical role in an

organization's adoption of 4IR technology. Leaders must be ready, willing, and equipped to drive the adoption of 4IR technology in their organizations. The adoption of 4IR technology is heavily contingent on leaders driving the adoption, and leaders must be ready and willing to adopt 4IR technology to be effective in the 4IR. In addition, leaders must have a growth mindset and be comfortable with ambiguity, spend time and energy learning about how 4IR technology is being effectively applied in different environments, and step out of their comfort zones to comprehend the global landscape in the context of 4IR.

Therefore, the leadership's role is crucial in an organization's adoption of 4IR technology.

6.3 Conclusion regarding research question 2

How does 4IR technology impact leadership strategies?

The research findings from this study yielded the following conclusions which can be drawn regarding the question, "How does 4IR technology impact leadership strategies?":

- 4IR technology is introducing additional complexity to the world of work, which presents challenges for leaders and organizations alike.
- The effective use and interplay of various 4IR technologies are driving the change in leadership requirements and organizations.
- Adopting 4IR technologies or combinations thereof enables the creation of entirely new markets and is transforming existing markets.
- Leaders in the 4IR need to be tech-savvy to be effective, and technology adoption is forcing a change in leadership strategies.

- To participate in technological or digital transformation, organizations must improve how business is performed, define what business to perform, create more value, and advance the corporate responsibility agenda.
- Leadership teams and their strategies are still relevant in the 4IR, but leaders must quickly recognize the impact of the 4IR and adapt accordingly.

Therefore, it can be concluded that 4IR technology is indeed impacting leadership strategies, and leaders need to develop a deep understanding of emerging technologies to be able to exploit them in the interest of the business. Leaders need to adapt to the changes brought about by 4IR technology and consider new leadership and organizational design approaches to remain effective.

6.4 Conclusion regarding research question 3

How is 4IR technology driving Mobile Financial Services in South Africa?

The research findings from this study as well as what is presented in the literature review positively align to reflect that 4IR technology is driving Mobile Financial Services (MFS) in South Africa through two main ways: access and customer experience. The study found that 4IR technologies, including mobile devices, are bridging the access gap for people who historically had limited access to traditional financial services, particularly in rural areas. The availability of affordable data and the adoption of smartphones have also enabled financial service providers and Fintech's to offer a wide range of MFS products and services, such as account opening, money transfer, and bill payments, mobile money, insurance and so on.

In addition, 4IR technology is enhancing the customer experience through the adoption and use of 4IR technology by providing better and more personalised services, such as instant customer support and personalised recommendations, which can increase trust, convenience, and value for customers and facilitate their adoption and usage of

MFS. Therefore, MFS providers and their leaders need to invest in and leverage these technologies to remain competitive and deliver superior customer experiences.

6.5 Recommendations

Considering the Fourth Industrial Revolution's perpetual and transformative nature, leaders must align with the concept of future-proofing. Integrating technologies such as the internet of things, artificial intelligence, and advanced robotics is rapidly changing the business landscape, disrupting existing industries and creating entirely new ones. This disruption affects previously relied-upon business models, necessitating leaders to prepare their organizations to defend their competitive advantage and thrive in this fast-changing environment.

Future-proofing is the process of anticipating and adapting to change, which involves identifying and mitigating potential risks, as well as seizing opportunities for growth and innovation. It is not only about ensuring the survival of an organization but also positioning it for long-term success. Therefore, leaders must embrace future-proofing to prepare themselves and their organizations to navigate the Fourth Industrial Revolution successfully.

6.6 Suggestions for further research

An exciting avenue for future research to be conducted could be to expand the view across various technology-driven industries to ascertain whether their perceptions of how the Fourth Industrial Revolution (4IR) is affecting leadership strategies are congruent with those held by leaders in the MFS sector. Moreover, exploring the potential negative behaviours, risks and consequences that may result from 4IR is a crucial area of inquiry to understand the impact on leaders and their organizations. These investigations would provide valuable insights to support leaders in

implementing effective strategies that account for the opportunities and challenges presented by 4IR in their respective industries.

References

Adler, N. J., & Gundersen, A. (2001). *International dimensions of organizational behavior*. South-Western Cincinnati, OH.

Agbehadji, I. E., Awuzie, B. O., & Ngowi, A. B. (2021). COVID-19 pandemic waves: 4IR technology utilisation in multi-sector economy. *Sustainability*, *13*(18), (No. 10168).

Akrananga, S. & Makau, B. (2016). Ethical Considerations and their Applications to Research: a Case of the University of Nairobi. *Journal of Educational Policy and Entrepreneurial Research, 3*(12), pp 1-9.

Almeida, F., Santos, J. D., & Monteiro, J. A. (2020). The challenges and opportunities in the digitalization of companies in a post-COVID-19 World. *IEEE Engineering Management Review*, *48*(3), 97-103.

Annunzio, S. (2001). *eLeadership: Proven technologies for creating an environment of speed and flexibility in the digital economy.* Free Press.

Aregbeshola, A., Luiz, J., Ojah, K., Oosthuizen,T., Palmer, P., & Venter, P. (2011). *Global Business Environments and Strategies, (4th Ed.)*. Oxford University Press.

Armstrong, B., Lee, G. (2022). *Digital Business* (2nd Ed). Silk Route Press

Babbie, E. (2021). *The practice of social research* (15th ed.). Cengage Learning.

Baez, B. (2002). Confidentiality in qualitative research: Reflections on secrets, power and agency. Qualitative research, 2(1), 35-58.

Balushi, K. (2018). The Use of Online Semi-Structured Interviews in Interpretive Research. Business & Sociology. *Semantic Scholar.*

Bass, B. M. (1985). Leadership and performance beyond expectations. New York: Free Press.

Bezuidenhout, R.M., Davis, C., & Du Plooy-Cilliers, F. (2014). *Research matters.* Juta and Company.

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology 3*(2), 77–101.

The Bill of Rights of the Constitution of the Republic of South Africa. (1996). Protection of Personal Information Act 4 of 2013. *Government Gazette*. (No. 17678). https://www.gov.za/documents/protection-personal-information-act

Clegg, S., Kornberger, M., & Rhodes, C. (2005). Managing and organizations: An introduction to theory and practice. London: Sage.

Collins, T., Fussell, C., McChrystal, S., & Silverman, D. (2015). *Team of Teams: New Rules of Engagement for a Complex World*, (1st ed.). Portfolio/Penguin.

Cortellazzo, L., Bruni, E., & Zampieri, R. (2019). The Role of Leadership in a Digitalized World: A Systematic Review. *Frontiers in Psychology*, *10*. https://doi.org/10.3389/fpsyg.2019.01938

Crawford, J., Dawkins, S., Martin, A., Lewis, G. (2019). Putting the leader back into authentic leadership: Reconceptualising and rethinking leaders. Australian Journal of Management. Sage. https://doi.org/10.1177/0312896219836460

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches (4th ed.).* SAGE Publications, Inc.

De Bruyn, M. (2014). The protection of personal information (POPI) act: impact on South Africa.

De Smet, A., Gagnon, C., & Mygatt, E. (2021). *Organising for the future: Nine keys to becoming a future-ready company*. McKinsey Quarterly/Company.

de Waal, A., & Linthorst, J. (2020). Future-proofing the high-performance organisation. *Sustainability*, *12*(20), 8507.

Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution. *World Bank.*

Dial M., & Storkey C. (2017). Futureproof. [VitalSource Bookshelf]. Retrieved from https://bookshelf.vitalsource.com/#/books/9781292186948/

Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. Psychological Review, 95(2), 256–273. https://doi.org/10.1037/0033-295X.95.2.256

Ekvall, G., & Arvonen, K. (1991). Change-centred leadership: An extension of the two-dimensional model. *Scandinavian Journal of Management, 7,* 17–26.

Fiedler, F. E. (1967). A theory of leadership effectiveness. New York: McGraw-Hill.

Fouka, G. & Mantzorou, M. (2011). What are the Major Ethical Issues in Conducting Research? Is there a Conflict between the Research Ethics and the Nature of Nursing?. *Health Science Journal. 5.* 3-14.

Freeman, R. E. (1984). Strategic management: A stakeholder approach. Boston: Pitman.

Garcia, M., Lipskiy, N., Tyson, J., Watkins, R., Esser, E. S., & Kinley, T. (2020). Centres for Disease Control and Prevention 2019 novel coronavirus disease (COVID-19) information management: addressing national health-care and public health needs for standardized data definitions and codified vocabulary for data exchange. *Journal ofthe American Medical Informatics Association: JAMIA*, *27*(9), 1476–1487.

Gardner, W. L., Cogliser, C. C., Davis, K. M., & Dickens, M. P. (2011). Authentic leadership: A review of the literature and research agenda. The leadership quarterly, 22(6), 1120-1145.

Gates Foundation (2017). "Financial inclusion: The role of mobile money."

GMSA (2021). "State of the Industry Report on Mobile Money."

Greg, J., et al. (2012). Leadership and decision-making. Journal of Leadership Education, 11(1), 34-45.

Govil, (2013). Ethical Considerations in Educational Research. *International Journal of Advancement in Education and Social Sciences, 1*(2), 17-22.

Gregory, R., Failing, L., Harstone, M., Long, G., McDaniels, T., & Ohlson, D. (2012). *Structured decision making: a practical guide to environmental management choices*. Wiley & Sons.

Harvard Business Review Analytic Services (2017). *Operationalizing Digital Transformation: New Insights Into Making Digital Work. 1–12*. Available online at: https://hbr.org/sponsored/2017/05/operationalizing-digital-transformation-new-insights-into-making-digital-transformation-work

Hayward, S. (2015). Connected Leadership. *Vital Source Bookshelf.* Retrieved from https://bookshelf.vitalsource.com/#/books/9781292104799/

Hersey, P., & Blanchard, K. H. (1969). Management of organizational behaviour: Utilizing human resources. Englewood Cliffs, NJ: Prentice-Hall.

Howitt, A., & Leonard, H. (2007). “Against desperate peril: High performance in emergency preparation and response,” in Deborah E. Gibbons, ed, *Communicable Crises: Prevention, Response, and Recovery in the Global Arena*, (1st ed.). Information Age Publishing.

Holland, B. (2021). *Handbook of Research on Library Response to the COVID-19 Pandemic.* IGI Global.

Hubbard, M., & Bailey, M. J. (2018). Mastering Microsoft Teams. In Mastering Microsoft Teams. Google Scholar.

Jain, S., & Singh, S. (2021). Future business leadership and Fourth Industrial Revolution: Reconceptualising the concept of VUCA. The Journal of Management Development, 40(1), 26-41. https://doi.org/10.1108/JMD-09-2019-0415

Johns, H. E., & Moser, H. R. (1989). From trait to transformation: The evolution of leadership theories. *Education, 110*(1), 115-123.

Johns, G., & Moser, K. (1989). Organizational strategy, structure and process. Academy of Management Journal, 32(3), 526-535.

Kalof, L., Dan, A. & Dietz, T. (2008). *Essentials of social research*. Open University Press.

Khan, A., & Nawaz, Z. (2016). Leadership Theories and Styles: A Literature Review. *Journal of Resources Development and Management, 16.*

Khan, A. (2020). Fourth Industrial Revolution: Impact on leadership and organisational culture. International Journal of Innovative Technology and Exploring Engineering, 9(5), 1917-1923.

Kojo, J. A., & Baah, P. O. (2021). Investigating the impact of social media marketing on consumer behavior: Evidence from Ghana. Journal of Retailing and Consumer Services, 58, 102322.

Kotter, J. P. (1996). Leading change. Boston, MA: Harvard Business Review Press.

Kouzes, J., & Posner, B. (2011). The Five Practices of Exemplary Leadership (2nd ed.). The Leadership Challenge. Wiley.

Krishnamurthy, S. (2020). The future of business education: A commentary in the shadow of the Covid-19 pandemic. *Journal of business research*, *117*, 1-5.

Kvale, S. (1996). Interviews: An Introduction to Qualitative Research Interviewing. Sage Publications

Margherita, A., & Heikkilä, M. (2021). Business continuity in the COVID-19 emergency: A framework of actions undertaken by world-leading companies. *Business Horizons*, *64*(5), 683-695.

Marwala, T. (2019). Mobile Financial Services and the Fourth Industrial Revolution. Springer International Publishing. https://doi.org/10.1007/978-3-030-04636-0

Marwala, T. (2020). Digital Disruption in South Africa: Harnessing the Fourth Industrial Revolution. Springer International Publishing.

Matsepe, N.T., & Van der Lingen, E. (2022). Determinants of emerging technologies adoption in the South African financial sector. South African Journal of Business Management, 53(1), a2493. https://doi.org/10.4102/sajbm.v53i1.2493

McAfee, A, Goldbloom, A, Brynjolfsson, E, & Howard, J. (2014). Artificial intelligence meets the C-suite. Mckinsey Quarterly, 3:66-75.

McKendrick, J. (2021, September). Innovation: AI Adoption Skyrocketed Over the Last 18 Months. Harvard Business Review. https://hbr.org/2021/09/ai-adoption-skyrocketed-over-the-last-18-months

McKinsey & Company. (2018). Six ways the Fourth Industrial Revolution can help achieve the Global Goals.

Moldenhauer, L., & Londt, C. (2018). Leadership, artificial intelligence and the need to redefine future skills development. In Proceedings of the European Conference on Management, Leadership & Governance (pp. 155-160).

Moonasar, D., Pillay, A., Leonard, E., Naidoo, R., Mngemane, S., Ramkrishna, W., Jamaloodien, K., Lebese, L., Chetty, K., Bamford, L., Tanna, G., Ntuli, N., Mlisana, K., Madikizela, L., Modisenyane, M., Englebrecht, C.,Maja, P., Bongweni, F., Furumele, T., Mayet, N., Goga, A., & Talisuana, A. (2021). COVID-19: lessons and experiences from South Africa's first surge. *BMJ Global Health*, 6, 1-5.

Nowakowska, M., & Tubis, A. (2015). Loadshedding and the energy security of the Republic of South Africa. *Journal of Polish Safety and Reliability Association,* 104-105.

Pedersen, P. (1989). Developing multicultural ethical guidelines for psychology. *International Journal of Psychology, 24*(1-5), 643–652. https://doi.org/10.1080/00207594.1989.10600073

Porter, M. E. (1997). Competitive strategy. *Measuring business excellence*.

PWC (2020). "The future of mobile financial services in South Africa."

PWC. (2021). Artificial Intelligence and Analytics: AI Predictions for 2021. https://www.pwc.com/us/en/tech-effect/ai-analytics/ai-predictions.html

Rhoades, E. (2011). Commentary: Literature reviews. *Volta Review*, *111,* 61-71.

Rowe, W. G. (2001). Creating wealth in organisations: The role of strategic leadership. *Academy of Management Perspectives*, *15*(1), 81-94.

Schwab, K. (2017). *The fourth industrial revolution*. Portfolio Penguin.

Sieber, J. E. (1992). The ethics and politics of sensitive research.

Singh, P., & Goyal, P. (2020). Future business leadership and fourth industrial revolution: A conceptual framework. Journal of Business and Retail Management Research, 14(2), 48-54.

Smith, A. M., & Green, M. (2018). Artificial intelligence and the role of

leadership. Journal of Leadership Studies, 12(3), 85-87.

Solis, B. (2011). Engage: The Complete Guide for Brands and Businesses to Build, Cultivate, and Measure Success in the New Web. John Wiley & Sons

Sousa, M., Da Rosa, L., Rodrigues, C., Campos, W., & Costa, J. (2022). Knowledge Transfer Through Digital Education Technologies in Higher Education. European Conference on Knowledge Management, 2, 1115.

The South African Depression and Anxiety Group (SADAG). Emergency Help Lines. https://www.sadag.org/index.php?option=com_content&view=article&id=11&Itemid=114

Tuffour, I. (2017). A critical overview of interpretative phenomenological analysis: a contemporary qualitative research approach. *Journal of Healthcare Communications, 2*(4). p. 52.

Venus, M., Stam, D., & Knippenberg, D. (2019). Visions of Change as Visions of Continuity. *Academy of Management Journal*, *62*(3), 667-690.

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, *122*, 889-901.

Verhoef, P. C., Kannan, P. K., Ingenbleek, P. T. (2021). "Business model innovation in the digital age"

Walumbwa, F., Avolio, B., Gardner, W., Wernsing, T., & Peterson, S. (2008). Authentic leadership: Development and validation of a theory-based measure. *Journal of Management, 34*, 89–126.

Wheeler, D. W. (2008). Behavioural leadership theory: an examination of the most influential theories. Journal of Management History, 14(4), 431-444.

World Bank. (2018). Financial inclusion on the rise, but gaps remain, global Findex data database shows. Press Release. https://www.worldbank.org/en/news/press-release/2018/04/19/financial-inclusion-on-the-rise-but-gaps-remain-global-findex- database-shows

World Bank (2020). "The role of mobile technology in addressing financial crimes."

World Health Organisation. (2020). Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV). Geneva.

Wrede, M., Velamuri, V. K., & Dauth, T. (2020). Top managers in the digital age: Exploring the role and practices of top managers in firms' digital transformation. *Managerial and Decision Economics*, *41*(8), 1549-1567.

Xu, M., David, J. M., & Kim, S. H. (2018). The fourth industrial revolution: Opportunities and challenges. *International journal of financial research*, *9*(2), 90-95.

Appendix A: The participant information sheet

Participant Information Sheet

Study Title: Exploring perceived effects of 4IR on leadership strategies in South African Mobile Financial Services firms

Dear Participant,

I, Michael Gray, am an MMDB student at the Wits Business School and am currently conducting research on perceived effects of 4IR on leadership strategies in South African Mobile Financial Services firms.

I would like to invite you to participate in my research study as I have identified you as an expert in your field within South Africa's Mobile Financial Services sector. Through your participation, I hope to understand more about how the concept of 4IR is affecting leadership strategies is understood, applied and implemented in the South African financial services industry.

Kindly consider the below points when deciding whether or not to participate in this study:

- Your participation in this study is voluntary and there are no costs or payments associated with participation
- You may refuse to participate or may withdraw from this study at any point, with no negative consequences
- Your privacy will be respected as your personal information will be treated with the strictest confidence and will only be available to me as the researcher
- The interview should take about 45 minutes to complete
- The interviews will be recorded and all information gathered will be stored securely for a period of 5 years
- Should you have any questions or concerns about the interview or participating in the study, you may contact me for further information at any point during this process on +27609723042 or 579688@students.wits.ac.za

Thank you,
Michael Gray

Appendix B: Participant agreement form (blank)



Consent Form

I…… (Full name of participant) hereby confirm that I understand the contents of the Participant Information Sheet provided to me as well as the nature of the research project. I understand that I am at liberty to withdraw from the project at any point, should I so desire, without consequence. In consenting to participate in this study, I hereby agree to have this interview recorded.

Dated at……on this…… day of October 2022.

Participant: Researcher: Michael Gray

Note for participant: *Your participation in this study is anonymous. The interview, including the data provided, is confidential and no identifiable data will be included in the research report.*

Appendix C: Actual instrument (Interview guide)

Interview guide

- Greet the research participant and thank them for finding the time to participate in the research interview
- Reiterate, and explain in more detail if required, that the objective of the interview is to gain insight into the participants lived experiences regarding the perceived effects of *4IR on leadership strategies in South African Mobile Financial Services firms*, as outlined in the Participant Information Sheet and the Consent form.

Guiding questions:

1. I understand that you are currently part of the leadership team within a Mobile Financial Services Firm, what functional area do you look after?
   a. What is your role within [insert response from 1.]
2. In your own words, what do you understand 4IR to be?
3. How do you see 4IR impacting your business?
4. Both from my personal experience as well as noted in literature, leadership teams in different organisations rationalise the adoption of 4IR technology in different ways. In your view, why should an organisations leadership team adopt of 4IR technology?
5. Acknowledging that the business landscape is changing as much as it is, what do you see as the primary leadership gaps?
6. As a key member of the leadership team within your Mobile Financial Services organisation, what do you see as your organisations biggest challenges in aligning with 4IR?
7. What would you consider to be the key benefits to advancing Mobile Financial Services brought about by using 4IR technologies?
   a. Are you and the rest of your leadership team adequately equipped to take full advantage of 4IR technology in securing your organisations competitive advantage?

8. In your opinion, are 4IR technologies driving changes in how leaders' function?
    a. If yes, please elaborate
    b. If no, why don't you think so?
9. Finally, if you were to suggest that every leader within your organisation change two things in order to take better advantage of 4IR technology, what would they be?

❖ Thank the research participant for their time spent and for making the time available to participate.

Appendix D: Ethics Clearance Certificate

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

Wits Business School Ethics Committee
Constituted under the University Human Research Ethics Committee (Non-Medical)

Ethics Clearance Certificate

Ethics protocol number: WBS/DB579688/648

This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

Project title	Perceived effects of 4IR on leadership strategies in South African mobile financial services firms
Investigator / Researcher	Mr Michael Gray
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentialty.
Issue Date of Certificate	2022-08-17
Expiry date	Date of submission of the project / research report
Chairperson	Prof Anthony Stacey ☎ +27 11 717 3587 +27 82 880 4531 anthony.stacey@wits.ac.za

Declaration by Researcher

One copy must be signed by the Researcher and returned to the Chairperson of the Wits Business School Ethics Committee.

I fully understand the conditions under which I am authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I undertake to resubmit the protocol to the Committee.

Signature

24 August 2022
Date: