UNIVERSITY OF KWAZULU-NATAL

Assessing the impact of leadership on technological innovation in the retirement fund industry

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DECLARATION

I, Yolisa Skwintshi with student number 204521062, declare that:

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Above all, God All Mighty for strength, wisdom, love and courage. It is HE that makes things ALL possible.

ABSTRACT

This study delves into the critical role of leadership in driving technological innovation within South Africa's retirement fund industry. The research emerges amidst a landscape marked by dynamic global forces—globalization, technological revolutions, and demographic shifts—that intensify competition across sectors, including the retirement fund industry. With increased life expectancies shaping investment horizons and the need for strategic decision-making, the study identifies a pressing need for innovation within this industry.

The scope of the project encompasses an exploration of leadership styles' impact on technological innovation within the retirement fund industry. Employing a quantitative methodology via a descriptive survey, data was collected through questionnaires distributed among hundred (100) departmental managers or project leaders from a pool of ten (10) distinct companies. Results indicate a dominant presence of transformational and democratic leadership styles, aligning with Transformational Leadership Theory, emphasizing their pivotal role in fostering an innovation-friendly environment.

Strategic leadership emerged as a key factor influencing technological innovation, showcasing a significant correlation between strategic support criteria and innovation outcomes. Findings underscore the importance of vision integration, resource allocation, and dedicated funds in driving innovation, substantiating the impact of strategic leadership on technological adoption levels.

The implications of this research are profound. Recommendations advocate for leadership development initiatives focusing on transformative and democratic leadership styles, emphasizing the necessity of inclusive decision-making processes. Strategic initiatives centered on vision integration, resource allocation, and idea facilitation are suggested to align innovation objectives with overarching strategic visions. Cultivating an organizational culture that fosters innovation, flattening hierarchical structures, and empowering younger talent are further highlighted as pivotal for driving technological advancements within the retirement fund sector.

This work contributes significantly to the body of knowledge, providing empirical evidence that supports the correlation between specific leadership styles—particularly transformative and strategic leadership—and fostering an environment conducive to technological innovation within the context of South Africa's retirement fund industry.

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CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

"Innovation distinguishes between a leader and a follower."

--- Steve Jobs, Apple co-founder

There is a lot of evidence that confirms that effective leadership is key to success of any innovation activity, project or management thereof (Xie et al, 2018). To enhance organizational creativity (Miao et al, 2018), launch and drive innovation projects (Oberer and Erkollar, 2018), implement innovation projects, and overcome resistance (Alves, Galina and Dobelin, 2018; Chege, Wang and Suntu, 2020), effective leadership is essential (Millar, Lockett and Ladd, 2018). Following this conclusion, Miao et al, (2018) assert that company executives are the main drivers of change, they have the potential and power to discourage or encourage innovation within their organisations. The extent to which employees participate in organisational changes is highly dependent on the dominant leadership style of the organisation, according to (Miao et al, 2018), this then affects the innovation culture of the organisation.

Millar, Lockett and Ladd, (2018) further notes that innovation failure is attributed to feeble leadership capabilities (Alves, Galina and Dobelin, 2018). Quite several research articles have been published looking at a relationship between leadership and innovation, articles like Relationship between innovation and leadership (Slimane, 2015), Leadership and innovation: The moderator role of organization support for innovative behaviors (Mokhber et al, 2017), Leadership and innovation in organizations: a systematic review of factors that mediate or moderate the relations (Denti and Hemlin, 2012) and Leadership and innovation (Barsh et al, 2008) . There is not a lot of research that focuses on leadership styles in the context of technological innovation and seeking to understand those aspects in relation to operational and organisational performance especially in the retirement fund sector. Rather than attempting to build a broad picture of the link between leadership and innovation, this study aims to assess the impact of leadership on technological innovation in the retirement fund industry. It will concentrate only on leadership styles in the context of technological innovation. The reason for focusing on leadership styles is that they provide diverse distinct lines of thinking while also

being comprehensive. Not all leadership styles will be researched, the focus will be on those leadership styles that have been previously established important linkages to innovation.

1.2 PROBLEM STATEMENT

More than ever before, the world need innovators. Globalization, migration, technology, and intellectual revolutions, as well as climate change challenges, influence every organization and company (Chege, Wang and Suntu, 2020). Phenomena like globalisation, migration, technology and intellectual revolutions have presented a problem of intense competition (Christofi et al., 2019). This intense competition is being experienced in various sectors and the retirement fund industry has not been spared (Xie et al., 2018). Nowadays people are living longer due to technology and medical research advancing at a very fast pace. It should be noted that the average life expectancy globally since the 1950s has increased from 30 years to 72 years. Therefore, this means retirement funds should look at forecasting their investments for a horizon of 80 years and above (Riscura, 2020). This also has an impact on making strategic decisions on investments and monitoring asset performance.

The retirement fund industry in South Africa consists of Pension, Provident, and Retirement Annuity Funds. The South African Government has been gradually modernising the legislative framework that governs the retirement fund industry since a publication of various discussion papers was announced in the 2012 Budget, these proposals are : Household savings and retirement, reducing retirement fund costs, reforming the annuities market, improving fund governance and the role of trustees, harmonising retirement fund taxation, pension fund investments, pension laws to be extended to all public funds and new tax-free savings instrument. These proposal are being done to strengthen retirement savings and to encourage South African households to save more for retirement, as published by the National Treasury. Some of the changes that are being made are proposals for what is called a two-pot system for retirement savings. This allows limited pre-withdrawal of retirement funds for short-term use in case of emergencies. Though retirement investments should be used for retirement purposes, the Government acknowledges that people might need their funds before they reach their retirement age, and the COVID-19 pandemic and similar emergencies encouraged these discussions, and it is for this reason that the 2021 Budget financial sector update this consideration was made (National Treasury, 2021).

This also poses a danger or risk for the retirement fund industry as it decreases contributions, affecting organisational investment performance. Also in this scenario, if this industry fails to meet customers' needs in having flexibility in their product offering to gain high investment returns, alternative investment solutions, better product offerings, easy access which are key areas for innovation and customers might not invest back if they can get better options.

Technology plays a huge role in these areas and therefore retirement fund companies, more so pension funds need to innovate more than ever before or will fail to meet customer needs and subsequently will lose existing, potential customers and pensioners to other financial institutions like banks that offer similar products though their core products are not pension or retirement products but transactional banking. The banking industry is very quick to innovate compared to other financial institutions due to their nature of transactional capabilities, variety of products, wide geographical market penetration, and larger numbers of customers. This is a threat to retirement fund executives, if they fail to innovate and compete at the same level as the banks, and to the words of Steve Jobs echoed above, they will be followers in their own industry.

According to research, high demand mixed with competition is a primary driver of innovation. The level of competition determines the level of innovation and production. If businesses are to sail through these challenging times, then innovation is essential (Alves, Galina and Dobelin, 2018). Leadership plays an important role in innovation (Chege, Wang and Suntu, 2020) it contains organisational and human components. It is a difficult concept to understand, most of organisational leadership is based on function and status (Alves, Galina and Dobelin, 2018). Seniority in an organisation determines power and control one has, the more senior the more powerful. Sometimes there is bureaucracy or a hierarchical system in place, with authority concentrated in the higher levels (Christofi et al. 2019). Organizational leadership may be autocratic and totalitarian at its worst. It has open lines of communication allowing a diverse variety of ideas to impact choices and policies when it is at its finest (Oberer and Erkollar, 2018).

1.3 IMPORTANCE OF THE STUDY

As stated earlier, the retirement fund industry in South Africa consists of Pension, Provident, and Retirement Annuity Funds, the pension and provident funds by their nature are very traditional and less agile in their operations. They are often based on fixed percentage benefit at retirement and also an employer-tied benefit. The employment world is changing, millennials are looking more at contracting and having multiple employments, and they have different ways of investing i.e. cryptocurrency, stock markets, etc. Having pension fund contributions as an employment benefit is no longer a lucrative attraction to the younger generation due to access to technology which provides various ways of making money and being able to invest differently. On the other hand retirement annuities are more flexible and provide highly effective estate planning tools and one can pause contribution if they are going through a financial crisis, however, still need to be more innovative to meet the needs of the upcoming generation. This study will explore both pension fund and retirement annuity synergies, leadership styles, innovation culture, and operations and therefore be able to provide recommendations for improvement more so to the pension funds and therefore contributing to the wider retirement fund industry.

1.4 AIM OF THE STUDY

The focus of this study is based on effective leadership in order to improve technology innovations and therefore improving organisational performance as a result. This study will assess the impact of Leadership on technological innovation in the retirement fund industry in South Africa. In order to achieve this the following objectives and questions are relevant for the study.

1.4.1 Research Objectives

- To determine how various leadership styles are impacting technological innovation in the retirement fund industry.
- To determine the relationship between strategic leadership and technological innovation.

- To provide recommendations for the retirement fund industry to leverage on leadership to foster technological innovation.

1.4.2 Research Questions

Research Question 1: How various leadership styles are impacting technological innovation in the retirement fund industry?

Research Question 2: What is the relationship between strategic leadership and technological innovation?

Research Question 3: What are the recommendations for the retirement fund industry to leverage on leadership to foster technological innovation?

1.5 DEFINITION OF KEY WORDS

- **Leadership**

Leadership can be conceptualised as the systematic undertaking of directing and exerting influence on individuals or collectives within an organisational context, with the aim of attaining shared goals and objectives. The process encompasses the establishment of a clear vision, the cultivation of staff motivation, and the formulation of strategic decisions aimed at propelling the organisation towards achievement (Northouse, 2021).

- **Technological Innovation**

Technological innovation encompasses the development, acceptance, and integration of new technologies, products, or procedures that lead to enhanced efficiency, efficacy, and competitiveness within an organisational or industrial context. Within the retirement fund business, technological innovation might cover the utilisation of digital platforms, data analytics, and artificial intelligence to augment customer services and investment strategies (Chesbrough, 2020).

- **Retirement Fund Industry**

The retirement fund industry in South Africa encompasses Pension Funds, Provident Funds, and Retirement Annuity Funds. According to the National Treasury (2021), these funds refer to financial institutions responsible for the management of retirement savings, for the purpose of ensuring financial stability for both employees and individuals during their retirement years.

- **Information Technology Improvements**

Technology advances encompass the progression and evolution of technology, encompassing various aspects such as hardware, software, and infrastructure. These innovations contribute to the augmentation of capabilities, performance, and functionality. Within the retirement fund sector, advancements in technology may encompass the integration of digital tools and platforms for the purposes of investment management and customer services (Porter & Heppelmann, 2019).

- **Life expectancy**

Life expectancy refers to the mean duration of life that an individual is anticipated to experience, as determined by empirical evidence. The aforementioned statement highlights the influence of enhancements in healthcare, living conditions, and medical progress on the strategies and plans of the retirement fund business, hence addressing the implications of extended retirement periods (World Bank, 2021).

- **Globalisation**

Globalisation is a phenomenon characterised by the progressive integration and interdependence of economies and societies on a global scale. Globalisation encompasses the unrestricted movement of commodities, services, financial resources, knowledge, and individuals beyond national boundaries, hence exerting an impact on commercial activities and investment choices across diverse sectors, including pension funds (Ritzer, 2019).

- **Migration**

Migration is the process by which individuals relocate from one location to another, whether it be within the confines of a nation or across international boundaries, motivated by a range of factors including the pursuit of improved economic prospects, access to education, or the desire to escape from situations of war. The migration phenomenon within the retirement fund

business has the potential to exert an influence on both the client base and the demographic composition of the workforce, hence impacting investment strategies (UN DESA, 2021).

1.6 RESEARCH METHODOLOGY

This section, will delineate on the research methods that will be used in this study. This includes where the research will be conducted (study area), data collection, population sample, sampling procedure, research design, questionnaire validation and data analysis method.

1.6.1 Research Approach and Design

This study utilises a research approach known as a quantitative method. Park et al (2020) describes quantitative research as a careful, diligent, and systematic technique expressing, testing correlations and examining cause-and-effect interactions among variables. It involves collecting and analysing numerical data. A descriptive survey method is used to collect data. A survey is used to gather original data in order to describe a population that is too vast to be observed first-hand (Delen and Zolbanin, 2018). Creswell (2014) also states that a survey gathers data from a sample group through self-report where subjects participate in a list of questions provided to them by the person conducting the research. A descriptive survey is chosen because it is able to give the researcher trends in the industry selected and be able to analyse volumes of data gathered to sample averages and patterns. The selected research design and method will achieve goal of the study, which is to assess the impact of leadership on technological innovation in the retirement fund industry.

1.6.2 The study population and sample

A population is defined as all components (individuals, objects, and events) that fulfil the sample requirements for inclusion in research (Creswell, 2014). The research will include all departmental managers in ten (10) selected companies in the South African retirement fund industry. From the ten selected companies, a convenient sample of 100 departmental managers or project leaders were chosen. The research will expand to include all available individuals until a sample size of 100 is obtained. A sample, according to (Park, Konge and Artino, 2019), is a set of items selected with the intention of studying and gaining insights about the overall population where they are drawn. Subjects who will participate in the study but were not

selected but were at the right place at the right time are referred to as a convenient sample (Taylor, and Medina, 2011). Convenient sampling was also chosen by the researcher because the researcher is a IT professional in the retirement fund industry and therefore identifying participating organisations would be easy, data can therefore be collected quickly and any recommendations that come out of the study the researcher can be able to apply them to improve the organisation that researcher is employed at.

1.6.3 Data collection instrument

The data for this study was gathered through a questionnaire that will be designed by the researcher and given to selected individuals. A questionnaire is described as a self-designed report which is utilised in order to gather data from subjects through written responses. Interview and questionnaire research methods are of a similar nature as the information gathered is similar, even though questions in a questionnaire are usually shorter and straight forward (McAvoy and Butler, 2018). A questionnaire was used to obtain data on the impact of leadership on technological innovation in the retirement fund industry. Below are the factors that influenced that determined the reasoning behind using:

- Guaranteed a better response rate since respondents will be given questionnaires to complete and the researcher will collect them personally.
- They take less time and energy to administer, and they allow for anonymity because participants' identities will not be needed on completed surveys.
- Since they are presented in a uniform way, there will be less chance of bias.
- Most of the questionnaire questions will be closed, which makes it easier to compare responses.

Aside from the benefits described above, questionnaires have certain drawbacks. For example, there is the issue of validity and accuracy (Park, Konge and Artino, 2019). Subjects may probably not give their honest opinions or convey their honest feelings about the subject but rather try to satisfy the researcher in their responses, and this may lead to critical or useful information not being given or withheld. The questionnaire will mostly comprise of closed-ended questions and less of open-ended to try and minimise misinterpretation. The individuals will be expected to answer in writing to open-ended questions, while closed-ended questions will have alternatives set by the researcher (Rahi, 2017). Since open-ended questions enable participants to reply to questions on their own terms and give greater depth, they will be

included. Since they are simpler to administer and analyse, closed-ended questions will be added. They are also more efficient in the sense that a responder may complete more closed-ended questions in a given amount of time than open-ended items (Elbardan and Kholeif, 2017).

1.6.4 Validity

The extent to which a tool or instrument measures what it is designed to measure is called as its validity (Delen and Zolbanin, 2018). The extent and accuracy to which an instrument represents all aspects of the constructs that is meant to measure in known as content validity. The questionnaire used covered a range of questions about the influence of leadership on technological innovation to ensure content validity (Rahi, 2017). To ensure that questions are reflective of the literature gap being studied, they are based on information acquired throughout the literature review. The researcher personally sent all questionnaires to participants using email or using google forms. To ensure that the questionnaires are easy to understand and simple, they were written in plain English. Subjects were guided on how to answer the questionnaires by providing clarity on how to respond. The questionnaire was sent to a researcher and statistician for validation. As a consequence, to achieve more representativeness, extra questions were included. To allow for meaningful data analysis, several questions were rephrased to clarify them, and more relevant alternative answer options will be introduced to closed-ended questions (Blaikie and Priest, 2017). The external validity of the data was guaranteed. External validity, according to (Jeong and Othman, 2016), is the degree to which research results may be extrapolated outside the sample size. To boost the reliability of the study metrics such as Cronbach's alpha were utilised in order to assess the internal coherence and dependability of a certain measurement instrument.

It may be challenging to find participants who are willing to engage in research, especially if the study entails a significant time commitment or other forms of investment on the side of the subjects. It's difficult to justify generalizing results to all members of a group when the number of people asked to participate in a research decreases. To encourage participation, the research questionnaire was designed to restrict the amount of time and effort required of individuals. The number of people who will be contacted for the research but decline to participate will be

documented so that risks to external validity may be assessed. External validity falls when the number of people who refuse to participate rises (Jeong and Othman, 2016).

1.6.5 Pretesting the Questionnaire

Blaikie and Priest, (2017) describes a pretest as a test run of the research instrument to determine if it consists of any flaws. They further state that it is imperative to ensure that a questionnaire that is used to gather data is clear and that subject understand what to do and how to respond. The questionnaire will be pre-tested on six people by the researcher.

1.6.6 Data Analysis

The data will be organised and analysed when it has been obtained. A computer tool called Statistical Package for Social Sciences (SPSS) or similar is going to be utilised to analyse closed-ended questions. Descriptive statistics will be utilised for data analysis. Data representation will be through graphs i.e., pie charts and bar charts when frequency tables are produced. If there are any open-ended questions or participants left comments, the researcher will use quantitative content analysis to analyse them. To systematically analyse verbal or written communication to be able to clarify meaning and gain insights is known as concept analysis (Jeong and Othman, 2016).

1.7 ETHICAL CONSIDERATIONS

Research requires more than skill and dedication it also requires honesty and integrity. This is to ensure that human rights are protected. These rights include but are not limited to confidentiality and self-determination and therefore an informed consent was given to the participants and complied with. The Ethics Committee at the University of KwaZulu-Natal (UKZN) provided written clearance to perform the research investigation and a gatekeeper's letter will be obtained from the participating organisations.

Permission from the participants was requested before they started to complete the survey. Creswell (2014) defines an informed consent as willingness of the selected participants to participate in the research after fully understanding the details, goals of the study and their right of participation in the research. The participant's rights was communicated to them so that they

can freely agree or disagree to participate in the research, also being able to pull out of research participation at any given point without penalty.

Participants were informed about the research aim, techniques that was used to gather data, and that there will be no possible hazards or expenses associated. Confidentiality and anonymity of the participants was be maintained throughout the research by ensuring that the names of the participants are not included in the research reports and when reporting the findings or anywhere else. They were informed that there will be no identifying information on the questionnaires, and they will only be numbered once the data has been gathered (Cuenya and Ruetti, 2010).

Informing participants about their rights and being able to choose whether they want to participate or not participate in the research is known as self-determination and will be highly upheld as an ethical concept in this research and the researcher will ensure that any future queries or concerns will be addressed by the researcher by supplying required information.

One of the key things that is a critical ethical obligation when conducting research is scientific honesty. Jeong and Othman (2016) describe this as alteration of the design and methodology and influencing or manipulating the data are known as examples of scientific dishonesty. (Jeong and Othman, 2016). By documenting the replies honestly, the researcher attempted to avoid any type of dishonesty. In this research an independent statistician will be used to ensure that there is no data manipulation. To prevent subjective participation, the statistician will provide their own findings comparable to that of the researcher and review of the open-ended questions if any will be sought from the supervisor for trustworthiness.

Olivier (2004) explains that an ethical committee should evaluate any research that uses human subjects before deciding whether to approve it for further use. This research was reviewed and approved the University of KwaZulu Natal Ethic Committee. Before participating in the study, all participants were required to agree by giving consent to participate in the study. Information gathered will be kept confidential by the researcher and the institution.

1.8 DISSERTATION OUTLINE

There are five (5) chapters that make up this study and are outlined as follows:

Chapter 1: provides the backdrop of the study, the issue statement, the scope, the research questions, and the importance of the study as an introduction to the thesis.

Chapter 2: provides a thorough evaluation of the relevant ideas that are connected to the research question, which is a literature review. It provides a complete understanding of the major ideas important to the study, such as innovation, information technology, the retirement fund industry, leadership and leadership styles.

Chapter 3: outlines the research methodology followed in the study, including research design and approach, data gathering instrument used during the research.
The research questions, findings are addressed and presented in **Chapter 4 and 5** respectively. Also in **Chapter 5**, from the standpoint of the research questions, the thesis' contribution is discussed. The chapter ends with an overview of the research's findings, recommendations for the participating organisations, a description of its significance, and a discussion of the potential directions for future research that were discovered throughout the study. The dissertation layout is graphically illustrated below in Figure 1.1.

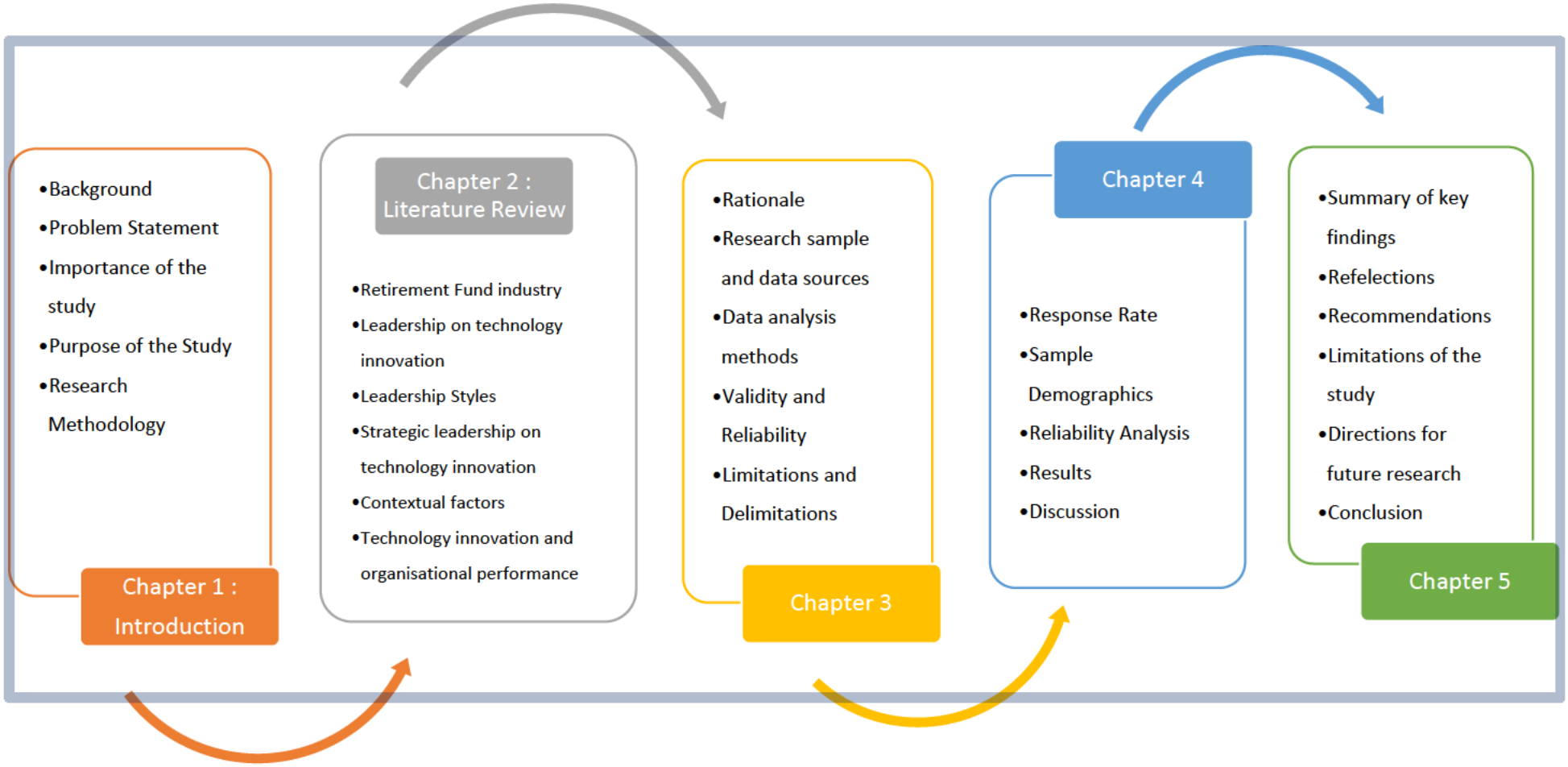


Figure 1.1. Dissertation layout

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter provides a comprehensive review of the existing literature pertaining to the study's focus on assessing the impact of Leadership on Technological Innovation in the Retirement Fund Industry in South Africa. The retirement fund industry in South Africa, comprising Pension, Provident, and Retirement Annuity Funds, faces significant challenges due to factors like globalization, migration, technological advancements, and increased life expectancy. The chapter initiates by defining key terms and presenting the theoretical framework employed in the research. Subsequently, the literature review examines how leadership influences technological innovation in the retirement fund industry, delving into various leadership styles, the correlation between strategic leadership and technological innovation, and recommendations for utilizing leadership to drive innovation. This review sets the groundwork for further exploration of the subject matter, shedding light on the vital role of leadership in fostering innovation in the South African retirement fund industry.

2.2 LEADERSHIP AND ITS IMPACT ON TECHNOLOGICAL INNOVATION IN THE RETIREMENT INDUSTRY.

The concept of leadership holds significant weight inside organisations, as it encompasses the process of exerting influence on individuals or groups to attain specific objectives, with a special emphasis on fostering creativity (Alblooshi et al., 2020). Leaders have a crucial role in fostering innovation, enhancing performance, and shaping the strategic direction of an organisation. They possess the ability to establish shared objectives inside the firm and influence the potential for innovation through their values and behaviours (Jia et al., 2018). The significance of leadership has grown in tandem with the intensifying competitiveness of the global corporate landscape (Gil et al., 2018).

The absence of a universally agreed-upon definition of leadership can be attributed to the existence of multiple leadership styles, such as authoritarian, transactional, democratic, and transformational, which are contingent upon the behaviours exhibited by leaders (Alblooshi et

al., 2020). Leadership is widely acknowledged as a significant factor in driving innovation, despite the existence of various leadership styles (Brillo and Boonstra, 2018; Gil et al., 2018).

The presence of leadership and management support has a crucial role in enhancing employee performance in the context of innovation strategy, as highlighted by Pasamar et al. (2019). The innovation performance levels of firms may vary significantly depending on the leadership styles they select (Khan et al., 2020). Nevertheless, it is not tenable to argue that one leadership style is superior to another, given that the effectiveness of leadership in fostering innovation is contingent upon various contextual and organisational factors. Furthermore, it is crucial to acknowledge that each leadership style offers significant contributions, as the specific needs of various organisations may necessitate the adoption of different leadership styles (Pasamar et al., 2019).

The current body of literature presents a minimum of 21 distinct leadership styles. However, it is important to note that these styles are not directly linked to organisational innovation techniques, as highlighted by Alblooshi et al. (2020). Furthermore, it is worth noting that there exist two primary avenues of linkage, which indicate a potential direct or indirect influence (Alblooshi et al., 2020). This paper aims to conduct an analysis of the four primary leadership styles, which exhibit variations in terms of staff participation, and elucidate their impact on the implementation of innovation strategies, as they play a crucial role in fostering this mindset (Pasamar et al., 2019).

2.2.1 Autocratic Leadership

The concept of autocratic leadership was initially proposed by Lewin (1935) and can be approached from an inclusive standpoint, emphasising the investment in human capital, team equilibrium, and a sole focus on quantitative outcomes (Moore et al., 2020). Likewise, this approach can provide significant efficacy when the individual in a leadership role possesses a heightened level of emotional intelligence. It proves particularly advantageous in situations characterised by high levels of stress and the need for prompt resolution of decisions (Abdullahi et al., 2020). Regardless of whether it is a technologically advanced organisation or a more conventional one, the implementation of autocratic leadership is crucial in ensuring the adherence to deadlines and fulfilment of tasks. According to Schaeffer (2002), they have the

ability to facilitate innovative processes. Moreover, it is noteworthy that authoritarian leaders assume a significant role in times of heightened stress, as shown by Brillo and Boonstra (2018).

This leader is commonly seen in organisations that exhibit traditional masculine cultural norms, hierarchical organisational structures, a significant power distance, and a collective orientation. Therefore, the aforementioned research conducted by Abdullahi et al. (2020) and Moore et al. (2020) establishes a connection between external environment orientation and small enterprises throughout their early stages. Autocratic leaders maintain exclusive authority and control by compelling their subordinates to adhere to their prescribed regulations. However, these leaders elucidate procedures and provide explicit instructions. Nevertheless, authoritarian leaders typically exhibit a reluctance to let their subordinates' autonomy in decision-making, since they often harbour a lack of confidence in the talents of their followers (Abdullahi et al., 2020).

One of the primary attributes exhibited by these individuals is a strong inclination towards control, displaying a lack of regard for the perspectives of their subordinates, and demonstrating a highly assertive approach when providing instructions for work-related tasks (Dyczkowska and Dyczkowski, 2018; Peker et al., 2018). The leaders in question exhibit diminished levels of creativity and are constrained in their communication practises, so impacting the satisfaction of employees and resulting in diminished patterns of motivation (Beerbohm, 2015). According to Abdullahi et al. (2020), there are instances where this phenomenon can result in elevated levels of absenteeism and staff turnover.

On the contrary, autocratic leaders adopt a favourable stance towards the incarceration of highly knowledgeable individuals and the suppression of long-term creative processes (Wagner, 1995). According to Peker et al. (2018), organisations characterised by this particular leadership style are characterised by a dominant tight hierarchical structure. Nevertheless, it is worth noting that in specific circumstances, there may be a justification for leaders to adopt an authoritarian approach (Beerbohm, 2015). According to Brillo and Boonstra (2018), autocratic leadership is a crucial aspect in organisations that require precise and flawless outcomes, particularly in manufacturing industries. This particular type of leadership has gained renown among military personnel, political figures, sports coaches, and select chief executive officers within the industrial sector. The utilisation of the authoritarian leadership style holds significance in situations where expeditious employee training is required, particularly inside fast-food establishments. Furthermore, this prominent figure can be observed within the realm

of the music industry, particularly in large-scale orchestras (Peker et al., 2018). Therefore, this leader assumes a significant position across several industries and assures the maintenance of high standards of efficiency in the outcomes delivered. Nevertheless, it is important to note that this approach might not effectively inspire or motivate followers, potentially leading to increased dropout rates and thus hindering the concentration on creative processes (Dyczkowska and Dyczkowski, 2018). The following hypothesis was developed based on the above characteristics:

2.2.2 Transactional Leadership

The concept of transactional leadership was initially introduced by Weber (1947) during his examination of transformational leadership (Barbuto 1977). According to Alblooshi et al. (2020), transactional leadership is distinguished by the manner in which leaders derive advantages from employees through a reciprocal exchange of benefits, contingent upon followers' compliance with their directives. This particular leadership style emerges when an individual proactively engages with others in order to obtain something of value in return (Noruzy et al., 2013). Integrity, responsibility, and reciprocity are fundamental principles that play a crucial role in the exchange process. Furthermore, the aforementioned values are derived from the requirements of the followers and are closely linked to their professional efficacy (Fakhri et al., 2020; Pasamar et al., 2019). The analysis of incentives and management entails evaluating two indications, specifically active or passive exception management. In alternative terms, the evaluation of leadership traits can be conducted by considering contingent reward, exception management, and laissez-faire, as previously mentioned by Fakhri et al. (2020). Hence, the transactional leader places emphasis on the exchange of advantages, rewards, incentives, and self-interest between the leader and followers (Donate and Guadamillas, 2011). According to Abdullahi et al. (2020), failure to attain the objective by the subordinate leads to punitive measures.

According to Jia et al. (2018) and Naqshbandi and Tabche (2018), it has been argued that transactional leadership may impede innovation and fail to foster organisational learning. Furthermore, this particular leadership style places emphasis on the contextual factors at play and is characterised by a tendency towards micromanagement or traditional managing approaches, often stemming from a fear of experimenting with novel ways (Łukowski, 2017).

According to Jia et al. (2018), these leaders endeavour to retain authority in order to mitigate potential risks associated with projects or routine activities. The association between a leader and a subordinate gives rise to a feeling of duty. This occurs as subordinates are required to demonstrate superior outcomes and exertion as a result of the thoughtful acts taken by leaders (Echebiri and Amundsen, 2021).

Transactional leaders have been observed to put a greater emphasis on individual duties rather than teamwork which instead promotes the development of specialised human capital (Jia et al., 2018; Pasamar et al., 2019). Similarly, these leaders exhibit a preference for investing in internal talent rather than resorting to outsourcing, as they recognise the significance of using existing resources (Jia et al., 2018). According to Alblooshi et al. (2020), One could posit that the influence of transactional leadership on innovation performance might be restricted in situations where creativity is inhibited, as the planned objectives inherent in this leadership approach may impede the production of original ideas. Nevertheless, the expeditious attainment of short-term objectives is crucial for enterprises, particularly within the context of huge organisations (Brillo & Boonstra, 2018).

2.2.3 Democratic Leadership

The concept of democratic leadership, also known as participative leadership, gained significant popularity throughout the latter part of the 20th century. The leadership style under consideration is predicated around a centralised decision-making process that is shared among all the individuals who follow the leader (Beerbohm, 2015). One notable characteristic of this particular style is its capacity to facilitate active engagement, a feature commonly observed in democratic political systems. Abdullahi et al. (2020) assert that the leader in question demonstrates attributes frequently encountered in organisations marked by a narrow power difference between leaders and followers, elevated levels of femininity and individualism, and diminished levels of uncertainty avoidance. The core essence of this leadership style lies in active engagement and involvement, setting it apart from other leadership approaches (Caillier, 2020).

Within the realm of start-ups and technology-based enterprises, this specific leadership style is widely regarded as advantageous. According to Dyczkowska & Dyczkowski (2018), it is suitable for organisations or projects that emphasise innovation and necessitate collaboration

and co-creation among diverse teams inside the organisation. Motivation is an additional attribute that delineates democratic leaders and engenders favourable outcomes in organisational performance. According to Beerbohm (2015), leaders in this particular approach demonstrate trust and foster motivation among their followers through the implementation and dissemination of their ideas. According to Peker et al. (2018), they exhibit developmental behaviours and empower followers by granting them autonomy in selecting their job techniques. According to Caillier (2020), democratic leadership can be regarded as a normative practice.

The significance of ideas in democratic leadership is emphasised, as they are deemed significant irrespective of their origin. This characteristic is evident inside academic institutions, as highlighted by Peker et al. (2018). Nevertheless, it is worth noting that the Democratic Party may have certain drawbacks, such as potential inefficiencies in procedural matters, limited effectiveness in managing larger organisations or corporations, and a tendency to impede flexibility in decision-making processes (Beerbohm, 2015).

2.2.4 Transformational Leadership

The aforementioned stylistic approach was first proposed by Burns (1978) and then elaborated upon in the realm of political leaders by Bass (1985). Bass conducted more investigation into the psychological processes that underlie transformational and transactional leadership, utilising the Multifactor Leadership Questionnaire (Łukowski, 2017) as a means to offer a more extensive elucidation. There has been a growing interest in transformational leadership due to its ability to foster creativity and promote innovation inside organisations (Wipulanusat et al., 2017). According to Łukowski (2017), extensive study has been conducted on the leadership style of transformational leadership in relation to its impact on innovation. Moreover, this particular type of leadership may be examined by taking into account four distinct sub-concepts, namely individualised influence, inspirational motivation, intellectual stimulation, and individualised consideration. The impact of leaders on innovation may be justified through four sub-concepts. One such sub-concept is the leaders' ability to effectively convey the significance of attaining certain objectives to their followers. By doing so, leaders can foster intrinsic motivation among their followers, so encouraging them to exert greater effort towards achieving these goals and ultimately enhancing their performance (Ryu and Shim, 2020).

According to Alblooshi et al. (2020), leaders that exhibit these characteristics are typically present in organisations that offer flexible work conditions and foster innovative workplaces. These leaders prioritise collective interests and goals, hence encouraging teamwork among employees. Furthermore, it can be argued that this particular leadership style exhibits a greater focus on innovation when compared to transactional leadership. This is mostly due to the fact that transformational leaders actively strive to engage and establish connections with employees, thereby aligning them with the overarching objective of the organisation (Pasamar et al., 2019). Moreover, they endeavour to explore novel techniques for problem-solving and maximise the potential of their workforce, thereby earning recognition as pioneers in fostering innovation (Alblooshi et al., 2020; Pasamar et al., 2019). The presence of learning skills among employees is advantageous for companies, as it enables leaders to prioritise the promotion of learning inside the organisation, hence fostering a good learning culture (Gil et al., 2018).

According to Pasamar et al. (2019), this particular leadership style has been observed to effectively foster innovation by setting clear and attainable objectives, motivating and empowering individuals, offering a compelling vision, and cultivating trust and confidence. As a result, by implementing these practises, leaders have the ability to empower their followers and cultivate a conducive environment for innovation, hence leading to improved results and the attainment of competitive advantages (Jia et al., 2018; Pasamar et al., 2019; Wipulanusat et al., 2017). According to Alblooshi et al. (2020), the organisation fosters a culture that promotes innovative thinking and beyond conventional norms. The captivating nature of the inspiration they convey tends to evoke a sense of passion among their subordinates towards their work. The delegation of ownership to employees through the investigation of several problem-solving alternatives from varied viewpoints is a key emphasis for transformative leaders. Both individuals possess effective communication skills and a willingness to take risks, which significantly influence the team's ability to originate and develop ideas, as well as create novel products, services, or technologies (Pasamar et al., 2019).

The importance of this particular leadership style lies in its ability to foster innovation. By placing emphasis on mentoring and coaching, this approach fosters intellectual stimulation and charismatic impact, so empowering individuals to improve their effectiveness without encountering criticism (Pasamar et al., 2019). According to Abdullahi et al. (2020), the effectiveness of transformational leadership is positively influenced by the presence of highly trained and experienced mentors. However, it is imperative for leaders to provide assistance to

their followers through training initiatives and the provision of resources in order to foster innovation (Alblooshi et al., 2020). These leaders adopt strategies to encourage exploration, facilitate learning, and enhance motivation by actively seeking systematic feedback from their staff. Nonetheless, effective leadership extends beyond mere incentive or compliance, encompassing the consideration of subordinates' views, preferences, and principles (Noruzy et al., 2013). The form of connection discussed in this context is characterised by enduring and favourable connections among employees, which revolve around trust and confidence (Gil et al., 2018).

According to Pasamar et al. (2019), the presence of transformational leadership has a significant effect on both incremental and radical innovation. Furthermore, it has been shown to have an impact on the development of other innovation capacities among followers. Additionally, transformational leadership has been found to influence organisational learning, which in turn enhances the overall level of innovation within an organisation. The project's success is influenced by the transformational leadership style, which has both direct and indirect effects (Aga et al., 2016).

2.3 STRATEGIC LEADERSHIP AND TECHNOLOGY INNOVATION

The role of strategic leadership is of utmost importance in fostering technical innovation within organisations, particularly the retirement fund business. Strategic leadership encompasses the process of establishing a distinct vision, articulating objectives that span a considerable duration, and devising comprehensive strategies to effectively attain the desired organisational outcomes (Northouse, 2021). The framework facilitates the alignment of innovation endeavours with the overarching corporate goal.

According to Odoardi (2021), the cultivation of a culture that promotes innovation and accepts technical breakthroughs is facilitated by effective strategic leadership. Leaders that use a strategic approach to prioritising innovation demonstrate their ability to manage resources and make investments in technology-driven initiatives that are in line with the long-term objectives of the organisation. Additionally, the authors West and Sacramento (2012) assert that the organisation also promotes and supports the practise of experimentation, fostering a secure

atmosphere that encourages employees to delve into novel concepts and technologies without apprehension of potential setbacks.

In addition, strategic leadership involves the continuous monitoring of technical trends and market dynamics in order to recognise emerging opportunities and possibly disruptive technologies (Porter & Heppelmann, 2019). Strategic leaders may effectively address evolving market conditions and foster technological innovation by adopting agile and adaptive leadership techniques. This proactive stance enables organisations to achieve sustainable growth and gain a competitive edge.

The reciprocal nature of the relationship between strategic leadership and technical innovation is evident, as the development of new strategies and technological developments can influence and mould the overall strategic trajectory of the organisation (West & Sacramento, 2012). Organisations led by visionary individuals who prioritise technical innovation are more inclined to attain long-term success and adaptability in an ever-changing financial environment.

2.3.1 Theoretical Framework for Strategic Theories in Innovation

This section explores the theoretical framework that forms the basis of strategic theories that clarify the connection between leadership and innovation. This study focuses on the analysis of the Upper Echelons Theory and Agency Theory in order to shed light on the impact of strategic leadership on the dynamics of innovation within organisations. These theories offer valuable perspectives on how the cognitive qualities of leaders and their interactions with agency partners influence the development of innovation strategies. This contributes to a holistic comprehension of the connection between leadership and innovation.

2.3.2 Upper echelons Theory

The notion of upper echelons, as proposed by Hambrick and Mason (1984), has garnered significant attention in academic literature. The idea is commonly employed by scholars to analyse the influence of CEO and group-level top management team (TMT) traits on innovation. For instance Talke, Salomo, and Kock (2011) have conducted research in this area. Limited attention has been given to the examination of the board or individual members of the

top management team (TMT) apart from the chief executive officer (CEO) in some scholarly investigations (Kurzhals et al., 2020). Since upper echelons theory was first based on the traits of CEOs and top management teams at the group level, this shouldn't come as a surprise (Carpenter, Geletkanycz, & Sanders, 2004). Numerous scholarly investigations have augmented the upper echelons theory by incorporating additional theoretical frameworks, such as leadership theories or personality theory. An example of this may be seen in the study conducted by Makri and Scandura (2010), where they discovered a positive correlation between the CEO's creative leadership and operational leadership, and the quantity of innovation produced by a corporation. Furthermore, a study conducted by Gerstner et al. (2013) demonstrated that CEOs with narcissistic traits exhibit a higher propensity to embrace disruptive innovations.

2.3.3 Agency Theory

According to Jensen and Meckling (1976), agency theory is the second most commonly employed theoretical framework. Consistent with the theoretical framework of agency theory, which examines the dynamics between principals and agents (Eisenhardt, 1989), a number of research papers have explored the influence of board-level features on the interaction between CEOs or features of the top management team (TMT). Zona (2016) conducted an analysis on the interactive impact of the proportion of outsiders on the board and the length of CEO tenure on the level of intensity in research and development (R&D). Prior research has investigated the correlation between innovation and specific board attributes, such as the composition of the board, as well as board compensation and ownership (Kurzhals et al., 2020). In line with the principles of agency theory, which places importance on the development of suitable incentive systems (Eisenhardt, 1989), the bulk of this research examine the correlation between innovation and CEO remuneration and ownership as indicated by Fong (2010). An instance of this can be observed in the study conducted by Makri et al. (2006), when a direct correlation was discovered between the number of citations received by a company's patents and the level of salary received by its CEO. Limited research has been done with regard to the incorporation of agency theory with other theoretical frameworks, such as the resource-based view.

2.3.4 Alternative theoretical frameworks

It is uncommon for authors to employ alternative theoretical frameworks. The literature on resource-based viewpoints encompasses the works of Eisenhardt and Schoonhoven (1996) as well as Somaya, Williamson, and Zhang (2007). Numerous scholars investigate the influence of business resources, including social capital and Research and Development (R&D) management capabilities, on innovation outcomes. The scholarly investigation of leadership theory examines the influence of distinct leadership styles on the advancement of technology (Osborn & Marion, 2009). Researchers often utilise the attention-based view (Koryak, et al., 2018) or resource-dependence theory in their scholarly investigations. The notion of compensation transparency was developed by Kalyta (2009) through the integration of managerial hegemony and optimal contracting theory. As CEOs approach the end of their careers, they tend to reduce investment in research and development (R&D) when they have retirement plans that are tied to their performance. In their study, Li, et al. (2007) utilised procedural justice theory to determine that there exists a positive correlation between new product performance and the procedural justice of top management team (TMT) decision-making. In their study, G. Chen et al. (2005) employed the theoretical framework of cooperation and competition as proposed by Deutsch (1973, 2011). Their findings indicated that when top management teams (TMTs) engage in cooperative behaviour, it enhances their effectiveness and fosters creativity. Conversely, adopting competitive strategies or avoiding confrontation within TMTs has been found to have detrimental effects on effectiveness and innovation.

2.3.5 The relationship between strategic leaders and technological innovation

Multiple research papers shed light on the impact of individual and group-level attributes of the board, CEO characteristics, and individual and group-level attributes of the top management team (TMT) on innovation-related outcomes. Below is a summary to illustrate this further.

2.3.5.1 Individual-level board member characteristics

“The concept of "CEO nonduality" refers to a situation in which the board chair is an external director (Zona, 2016). It is suggested that external board chairpersons may structure the

interests of management and shareholders to reduce agency problems, which are especially prominent in innovation due to risk and uncertainty. Kor (2006) found a favourable association between CEO non-duality and innovation input, suggesting that outside chairpersons should urge management to focus on long-term investments. In a related study, Zona (2016) investigated the influence of CEO tenure on the relationship described above. The findings revealed that CEO non-duality has differing effects on R&D investments depending on the length of CEO tenure. Specifically, it was observed that R&D investments tend to grow when CEO non-duality is present in situations of longer terms of office of CEOs, whereas they decrease in instances of short terms of office for the CEO. The author posits that the ability of the board to enhance R&D investments is contingent upon the CEO's acquisition of adequate autonomy, which is facilitated by a longer tenure. Subsequent research has revealed that the inclusion of CEO non-duality amplifies the influence of CEO and family rights on stock in relation to innovation outcomes. The flip link, namely the impact of innovation on strategic leaders, was investigated by Balsam et al. (2016). The researchers discover that organisations that invest significantly in research and development are more inclined to appoint an external board chair. They posit that shareholders of these firms may want an external chairperson in order to enhance supervision of the management. In general, the findings of Balsam et al. (2016) indicate that caution should be exercised when interpreting the conclusions of Kor's study.

2.3.5.2 Group-level board characteristics

A number of studies have covered the population characteristics of board members at group level in relation to technical innovation. This study shows that there is a positive link between gender and racial diversity and innovation outcomes. This is because gender and racial diversity can bring new ideas and perspectives to board meetings (Kurzhals et al., 2020). Cook and Glass (2015) looked at a sample of US companies " in situations when a Chief Executive Officer (CEO) of Caucasian descent oversees the operations of a board that includes individuals from various racial and ethnic backgrounds," and found a positive link between board diversity and new product development.

Research shows that board members' prior job and education experience affect innovation differently. The decision-making process of directors on complex strategic matters, such as technology innovation, is significantly shaped by their prior professional background. When

they have more outside directors with patent-intensive firm experience or technical, research-related experience (Haneda & Ito, 2018), firms have higher innovation input and output. Directors with entrepreneurial financial experience may prioritise cost-effective research, according to Dalziel et al. (2011). Education's effects are unclear. According to Dalziel, Gentry, and Bowerman (2011), there exists a positive correlation between directors who possess high-level educational backgrounds and their ability to contribute to innovation within an organisation. Conversely, the presence of outside directors with PhD degrees, which are typically associated with research expertise, is found to have a negative association with innovation. The authors of the study could not uncover any significant correlation between inside directors' doctoral degrees or entrepreneurial financial expertise and expenditures for research and development. This highlights the need of distinguishing between inside and outside directors when examining this relationship.

Technological innovation and board makeup and structure have been extensively studied. The majority of research endeavours focus on investigating the impact of board independence on innovation by analysing the proportion of external members in relation to internal directors. Deutsch (2005) found this ratio negatively correlated with innovation input in his meta-analysis. The outcomes were not in line with the agency theory, which states that outside directors minimize the unwillingness by managers to spend on risky, long-term innovation. Foreign technology procurement may be preferred by outside directors due to their limited understanding of internal research and development processes. Zona (2016) found favourable impacts at later CEO tenure, positing that the correlation between the proportion of outsiders and the level of innovation contribution may be contingent upon the length of time a CEO has held their position. Osma (2008) found that CEOs with more outside directors are less likely to cut R&D when their firms lose money. Existing research has demonstrated a positive correlation between the ratio of external directors and an organization's patenting activities and exploitative innovation. This implies that the oversight provided by outside directors may incentivize managers to prioritise innovation outputs that are less risky and more easily measurable. According to the study conducted by Arzubiaga et al. (2018), it was discovered that the oversight and guidance provided by the board of directors enhances the relationship between entrepreneurial mindset and ambidextrous innovation within family-owned businesses in Spain.

Subsequent research conducted on the relationship between directors' familial affiliations and the consequences of innovation places particular emphasis on the contexts of business and corporate governance. In a study conducted by Matzler et al. (2015), it was found that the presence of family representation on supervisory boards of German firms has a negative impact on innovation input while positively affecting innovation output. This suggests that the inclusion of family members in these boards leads to enhanced innovation efficiency. In a study conducted by Bannò (2016), it was discovered that there exists a negative correlation between the effectiveness of innovation and the level of family representation on the boards of Italian family firms.

The findings of the research indicate that the limited understanding of internal innovation processes and capabilities among outside directors has a significant impact on their decision-making. According to Hoskisson et al. (2002), there exists a positive correlation between the stock ownership of outside directors and external innovation. Conversely, the stock ownership of inside directors is positively associated with internal innovation. Kang and Zaheer (2018) found that there is a favourable correlation between the stock ownership of outside directors and the selection of partners for R&D partnerships by enterprises that have no previous connections to the focal firm. Furthermore, connections to other firms provide boards with valuable information. The efficiency of R&D capital utilisation can be enhanced by directors who possess stronger affiliations with high-tech organisations, whereas conversely, such associations may prove counterproductive for low-tech firms.

According to Li (2019), the presence of industry diversity in board connections and interlocks with research and development (R&D)-intensive companies enhances the probability of organisations engaging in technological exploration. However, it was also found by M. Li that the proportion of interlocks among directors who possess output functional experience is negatively correlated with technological exploration. This implies that interlocks may have limited significance in relation to technological innovation. Moreover, certain connections inhibit the expression of creativity. According to Rose et al. (2014), there is a positive correlation between directors' intraorganizational friendship relations with the CEO and a decrease in innovation investments that are specifically aimed at providing short-term benefits to the CEO. The identification of these connections enhances this phenomenon, emphasising the impact of social relationships on corporate governance (Rose, Rose, Norman, & Mazza, 2014).

2.3.5.3 Individual-level CEO characteristics

The characteristics of chief executive officers (CEOs) and their impact on innovation have been the subject of substantial academic research. Hambrick (2007) utilises demographic characteristics as a means to represent CEO cognitive frames. Age and tenure have a detrimental effect on the risk appetite, capacity to assimilate new knowledge, and innovative endeavours of CEOs. According to Kurzhals et al. (2020), CEOs who have longer tenures exhibit a tendency to favour stability above technological advancements and allocate fewer resources towards technical innovation. According to Cheng's (2004) findings, remuneration committees address the career-horizon conundrum by establishing a linkage between R&D investment and the salary of senior executives. The potential limitations on innovation intake and output may arise from the advanced age of CEOs and their limited career horizon, since senior executives may exhibit reduced receptiveness towards novel ideas and organisational transformations. The aforementioned facts also suggest that the decrease in research and development (R&D) investments by older and more experienced chief executive officers (CEOs) does not signify enhanced efficiency in innovation, but rather reflects their preference for short-term investments. The study conducted by Cho and Kim (2017) revealed that a decrease in research and development (R&D) investments helps to alleviate the adverse relationship between the term of the CEO and the amount of innovation produced.

The decision-making process of CEOs with regards to innovation is influenced by their work and educational background (Barker & Mueller, 2002). The impact of work exposure on output functions that emphasise business growth through the development of new products or entry into new markets seems to persuade CEOs to favour innovation strategies, leading to an associated increase in research and development (R&D) spending. In regards to the realm of educational background, a notable correlation exists between the number of science or engineering degrees obtained by a CEO and the level of expenditure on research and development (R&D). Conversely, the total educational attainment and number of business degrees held by the CEO do not provide any statistically significant effects, provided that the CEO possesses a college degree. Nevertheless, it is important to consider the possibility of reverse causality in this relationship. Datta and Guthrie (1994) discovered that organisations that prioritise research and development are inclined to appoint CEOs who possess technical expertise and a higher educational attainment.

Furthermore, empirical research has demonstrated a substantial influence of chief executive officer (CEO) personality traits on the outcomes of innovation initiatives. It is noteworthy that the outcomes of firms' technological innovation are influenced by certain personality traits of their CEOs. These are characteristics that are linked to risk-seeking conduct, a perception of superiority, and a longing for attention or recognition are widely known as sensation-seeking. Additionally, overconfidence, hubris, and narcissism have been identified as relevant traits (Kurzhals et al., 2020). Interestingly, narcissism can coexist paradoxically with humility. According to scholarly research, it has been suggested that the presence of narcissistic characteristics in a CEO is a prerequisite for fostering innovation within an organisation. These tendencies enable the CEO to gain personal satisfaction from receiving attention and to exhibit a reduced level of hesitation when making investments, even in the face of unfavourable odds and significant resource constraints (Kurzhals et al., 2020). Moreover, in a study conducted by Zhang, et al. (2017), it was discovered that the socialised charisma of CEOs, which refers to their capacity to motivate staff and garner backing for new routines and practises, serves as a mediator for the favourable combined impact of elevated levels of humility and narcissism on a company's inclination towards innovation.

Academic researchers have also conducted investigations on the cognitive mechanisms by which chief executive officers (CEOs) direct their attention to and interpret their surroundings. According to previous research, there is evidence indicating that the level of attention given by CEOs to particular technologies or product-development processes has a direct impact on the resulting innovation outcomes (Kurzhals et al., 2020). An illustration of this may be seen in the study conducted by Kaplan (2008a), which demonstrated a correlation between shifts in CEOs' focus towards fiber-optic technology and an increase in patenting endeavours within this domain. In a similar vein, the temporal orientations of chief executive officers (CEOs) are of significance. In dynamic contexts, there is a higher propensity for enterprises to engage in the introduction of novel products when the Chief Executive Officer (CEO) demonstrates a strong orientation towards both the present and future. According to Nadkarni and Chen (2014), under stable circumstances, enterprises are more inclined to engage in such behaviour when the CEO demonstrates a greater emphasis on historical and current aspects. Gerstner et al. (2013) conducted a study examining the relationship between personality traits, attention, and innovation outcomes. The researchers found that the CEO's personal views affect how much attention top management pays to change that doesn't happen all at once. Specifically, the

degree of attention is heightened in correlation with the level of narcissism exhibited by chief executive officers (CEOs). Managerial attention serves as a mediator in the relationship between CEO narcissism and the adoption of discontinuous technology, particularly during the period of technological upheaval.

The leadership style of the CEO has a significant impact on the outcomes of technological innovation. Transformational leadership is the leadership style that has been extensively examined in this particular setting. It has been found to have a beneficial impact on innovation results, as evidenced by studies conducted by Elenkov and Manev (2005). The lack of surprise can be attributed to the fact that the fundamental components of transformational leadership, namely charisma, idealised influence, and intellectual stimulation, empower leaders to generate dedication among their subordinates and foster the creativity of employees (Kurzhals et al., 2020). The relationship between transformational leadership and innovation outcomes is reinforced by a range of organisational and environmental characteristics. These include a supportive organisational climate that encourages innovation, reduced levels of centralization and formalisation within the organisation, and increased levels of competition and environmental uncertainty (Jung, Wu, & Chow, 2008). Chen et al. (2014) underscored the importance of corporate entrepreneurship, a term denoting a firm's activities pertaining to exploring and revitalization, as a strategy adopted by transformational CEOs to augment inventive practises. The authors contend that transformative chief executive officers (CEOs) play a crucial role in motivating employees to reassess old routines and cultivate new company ventures. This, in turn, enhances the likelihood of corporate entrepreneurship within the organisation. As a result, the researchers discover that corporate entrepreneurship serves as a mediator in the association between transformational leadership and product innovation.

CEOs' overall corporate ownership positively impacts innovation. R&D intensity decreases with larger short-term stock and option values and restricted stock values (Kurzhals et al., 2020). Some scholars analyse the focal firm's strategic leaders or other qualities. According to Lim (2015), an increase in the proportion of external directors with higher stock alternatives can lead to increased board alertness. This heightened vigilance, in turn, has the potential to alleviate the unfavourable relationship between CEOs' restricted stock values and their firms' investments in research and development (R&D). The study conducted by Zona (2016) demonstrated that the utilisation of stock choices has the potential to mitigate the adverse impact of CEOs' career horizons on innovation outcomes. The study conducted by Gedajlovic

et al. (2012) examined the potential mediating role of top management team (TMT) holistic decision-making in the relationship between CEO ownership and innovation outcomes. According to the authors, the shareholdings of CEOs, which can be seen as a representation of management shareholdings, serve as a driving force for managers to make comprehensive judgements. In a study conducted on a sample of Chinese high-tech SMEs, it was discovered that the extent of decision comprehensiveness in the top management team (TMT) largely accounts for the positive relationship shown between CEO stock ownership and ambidextrous innovation.

CEOs' network connections and social capital have been found to yield both favourable outcomes and imitative consequences inside the realm of innovation. The extent of a chief executive officer's (CEO) network plays a crucial role in enabling access to pertinent information and has the potential to exert a beneficial influence on the innovation results of the organisation (Kurzhals et al., 2020). Furthermore, the presence of outside directorships held by CEOs contributes to the development of strategic imitation and leads to a corresponding increase in the level of research and development (R&D) investment within the CEOs' respective companies. This effect is shown to strengthen as the CEOs' tenure as external executives lengthens.

2.3.5.4 Individual-level TMT member characteristics

Limited attention has been devoted by scholars to examining the individual characteristics of high-ranking executives, with the exception of the Chief Executive Officer. According to Kurzhals et al. (2020), firms' creative endeavours can have a favourable influence on the appointment of chief diversity officers and the compensation of chief marketing officers. In their study, Garms and Engelen (2019) discovered a positive association between innovation outcomes and the structural power of chief technology officers (CTOs). This power originates from their position of authority within the top management team (TMT) and influences their impact on decision-making inside the TMT. They also demonstrate that the expert power of Chief Technology Officers (CTOs), derived from their technical expertise, has a detrimental impact on innovation outcomes. Furthermore, they propose that CTOs with high levels of specialist authority may exhibit increased awareness of potential risks associated with innovation.

2.3.5.5 Group-level TMT characteristics

Studies in technological innovation focus on the Top Management Team. These studies examine TMT demographics. An increase in the average age of top management team members can further amplify the adverse effects of a CEO's limited focus on long-term goals on the intensity of research and development activities (Heyden, et al, 2017). Bantel and Jackson (1989) could not identify any significant correlation between the age of top management teams (TMT) and the adoption of innovation. Like CEO tenure, TMT tenure negatively affects R&D intensity (Kor, 2006). In high-tech businesses, knowledge from longer tenure may outweigh inertial effects. According to the findings of Srivastava and Lee (2005), an extended tenure of top management team (TMT) members has been found to have a decelerating effect on the introduction of new products and diminishes the likelihood of being the first mover in the telecommunications and brewing sectors. However, in the computer business, the opposite trend is observed. In a study conducted by Chen et al. (2019), it was discovered that there exists a positive correlation between the diversity of top management team (TMT) tenure and the level of organisational ambidexterity.

Additionally, TMT education impacts innovation. Innovation can be promoted through technically inclined degrees and TMT education (Heyden, et al 2017). In contrast, the study conducted by Deeds et al. (2000) revealed a link that was moderately significant yet adverse between the proportion of top management team (TMT) members possessing advanced degrees and the quantity of newly produced goods. This finding suggests that the transition of technical experts from laboratory roles to managerial positions may have a detrimental impact on the process of product creation. Heyden et al. (2017) also discovered that CEO horizon issues do not improve with TMT education.

TMTs possessing expertise in particular subjects or sectors exhibit a tendency to prioritise innovative endeavours that are directly linked to those subjects or sectors. Tyler and Steensma (1998) revealed that TMT members' technical work expertise positively influenced their research alliance ratings. Kor (2006) discovered that shared TMT experiences led to technical innovation. According to Kor (2006), the impact of the board's external ratio on the firm's R&D intensity is influenced by the disparity in the functional experiences of top management team (TMT) members. The study found that higher degrees of diversity have a negative association with R&D intensity, whereas lower levels have a positive association.

The primary focus of scholarly investigations pertaining to the composition and structure of top management teams (TMTs) predominantly revolves around analysing the impact of TMT scale on the velocity and mechanisms involved in decision-making. There exists a positive correlation between the size of a top management team (TMT) and the establishment of alliances, as larger TMTs may possess the necessary resources, including contacts to possible associates (Kurzhals et al., 2020). Moreover, it has been found that organisations characterised by larger top management teams (TMTs) have a higher propensity to pioneer the introduction of novel goods within their respective industries (Srivastava & Lee, 2005).

Research on TMT collaboration and behaviour in technological innovation is expanding beyond demographic characteristics and TMT composition. Complex innovation processes require TMT cooperation. In this context, the enhancement of innovation outcomes can be achieved by the implementation of behavioural integration, shared vision, social integration, and general top management team (TMT) integration. These factors are particularly crucial in the context of ambidextrous innovation, which necessitates the delicate balance between exploitative and explorative innovation, despite their somewhat contradictory nature. According to the study conducted by Ou et al. (2018), it was observed that the gap in remuneration between CEOs and top management teams (TMTs) has a detrimental impact on TMT integration. However, it was also shown that TMT integration has a beneficial influence on ambidextrous innovation. Finally, TMT conflict management requires collaboration (Qian, Cao, & Takeuchi, 2013). G. Chen et al. (2005) found that TMT cooperative conflict management promotes team effectiveness and innovation.

2.3.6 Contextual Factors

2.3.6.1 Organisational factors

Strategic leaders and technological innovation are also influenced by organisational characteristics. Regarding this matter, the CEO's focus on technologies could perhaps offset the lack of organisational expertise in those technologies (Kaplan, 2008a). Top executives' inclination to join technical partnerships seems to increase with corporate experience (Tyler & Steensma, 1998). According to Lyngsie and Foss (2017), organisational gender proportions negatively impact the connection between female members of the top management team (TMT) and the outcomes of innovation. According to the findings of Jung et al. (2008), there

is a positive relationship between CEO transformational leadership and innovation when an organisational culture that promotes empowerment and supports innovation is present. Conversely, the presence of centralization and formalisation in the organisational structure has a negative impact on this relationship. Kraft and Bausch (2016) discovered that there exists a favourable interaction effect between the entrepreneurial orientation of firms and different board characteristics, which influences the innovation orientation of said firms. Additionally, they observed an intermediary effect of entrepreneurial positioning in the relationship between transformational leadership style of top management teams (TMTs) and the innovation orientation of firms.

2.3.6.2 Environmental factors

Environmental influences outside the organisation have had conflicting effects on innovation outcomes. Some studies have studied the sociocultural background, although company location appears to have little effect on top management team (TMT) functional role, experience, or leadership behaviour and innovation outcomes. Hofstede's cultural factors moderate TMT leadership's impact on innovation. Environmental dynamism is a stronger moderator, favourably affecting strategic leaders' qualities and creativity, especially in uncertain circumstances. In dynamic circumstances, shorter CEO tenure and greater CEO attention on the present and future boost innovation. R&D intensity and competition have been studied as moderators, with mixed findings. (Kurzhals et al., 2020)

2.4 RETIREMENT FUND INDUSTRY IN SOUTH AFRICA

A Retirement fund is a collection of cash or assets that has been accumulated over the course of an employee's employment by contributions from both the company and the individual. An agreement that is negotiated between an employer and his employees establishes such Funds. Each Fund is set up according to Rules that specify who must contribute, how much they should contribute, and who qualifies for benefits. The Structure of the Funds must also have the Commissioner for Inland Revenue's approval if tax reduction on contributions and benefits is necessary.

According to the Metal Industries Benefit Funds Administrators (MIBFA, 2023), the Pension Funds Act No. 24 of 1956 (as modified), which went into effect on January 1, 1958, governs retirement funds in South Africa. Since that time, all pension, provident, and retirement annuity funds are required to register in accordance with this Act. The Pension Funds Act's primary objectives are to:

- Ensure all organizations that act as retirement funds should be registered and governed.
- Defend the members' rights.
- Ensure that the Funds uphold the necessary levels of solvency. That employers don't break their promises to workers and abandon them in their old age.
- The Funds provide equitable ownership and accountability of the participating parties by acting as independent legal entities.
- Funds that are unsound financially or willfully break the law should be dissolved.

The Metal Industries Benefit Funds Administrators (MIBFA) states that a retirement fund's primary goal is to:

- Provide a member who reaches retirement age with a retirement benefit, which may come in the form of a lump sum payment, a regular monthly income, or both.
- People who are unable to work due to conditions like permanent incapacity should be given a lump amount or a monthly check.
- Ensure the support of an employee's dependents in the event that they pass away before reaching retirement age or, in some cases, even after retiring.

Four different types of retirement funds exist in South Africa namely:

- A Retirement Fund – a personal pension plan and available to individuals
- A Pension Fund – offered by employers and not available to the public
- A Preservation Fund - allows employees to keep their pension or provident fund investments when they resign from employment.
- A Provident Fund - offered by employers and not available to the public

There are different types of companies that are in the retirement fund industry. According to the Financial Sector Conduct Authority (FSCA, 2017) there are 5 158 retirement funds in South

Africa. For the purpose of this study, 10 companies have been selected to participate in the research. These companies are namely: -

- **Alex Forbes**- a financial services company that offers integrated retirement, investment, life and insurance solutions to individuals and employers.
- **Eskom Pension and Provident Fund (EPPF)** – is a retirement, pension, and provident fund established for Eskom employees
- **Government Employees Pension Fund (GEPF)** – is the largest pension fund in South Africa which manages pensions and associated benefits on behalf of South African government workers.
- **Momentum Corporate** - provides retirement solutions, medical aid, investments and wellness employee benefits to South African corporates.
- **Motor Industry Fund Administrators (MIFA)** - manages and administers Motor Industry Retirement Funds (MIRF) and its five retirements funds namely, the Copartes Fund, the Auto Workers' Provident Fund, The Motor Industry Pension Fund (2005), the Motor Industry Provident Fund and the Motor Industry Beneficiary Fund.
- **National Fund for Municipal Workers (NFMW)** – is the largest fund within South African local government and manages pensions and related benefits for municipal workers and councillors across South Africa
- **Post Office Retirement Fund** – provides and manages pensions and benefits for the South African Post Office (SAPO) employees
- **Sanlam Corporate** – provides insurance, retirement solutions, financial advice, investments to South African corporates.
- **Telkom Retirement Fund** - is a retirement, pension, and provident fund established for Eskom employees
- **Sentinel Retirement Fund** - It is set up as a defined contribution pension fund that also offers monthly pensions and self-insured risk benefit coverage (death & disability) for various organisations.

2.4.1 Retirement Fund Industry Trends

Over the past few years, there has been a lot of change in the retirement funds market in South Africa. The main focus has been on tighter regulation to safeguard members' interests. There's

no denying that the COVID-19 epidemic, which has affected the world's economies and health systems, has affected the business as well (Mahubela, 2020).

The following are some of the major changes arising from the effects of COVID-19 on the pensions fund industry and the shifting regulatory environment:

- **Financial distress**: An increase in financial difficulties among South African companies and a decrease in contributions during the lockdown's peak. "A recent survey conducted by the FSCA in June 2020 reveals that the employer was in some form of financial distress in nearly 40% (and 47% if non-employer related funds are excluded) of active retirement funds because the employer, employee, or both had approached the fund to request a temporary suspension or reduction of retirement contributions," says Makhubela (2020).

- **A growing disparity in retirement savings**: This represents the discrepancy between retirement savings and necessities. Because of longevity, the gap is widening. According to the BlackRock 2023 Read on Retirement study, a mere 21% of employees expressed confidence in their ability to save sufficient funds for retirement. Global retirement reforms seek to address the growing disparity in retirement savings. But for many workers and retirees, retirement reforms—whether they involve raising the retirement age or mandating the preservation of retirement savings—are moving too slowly, and they will have to figure out how to handle the issues of longevity on their own.

- **Longevity**: Planning for retirement requires accepting longevity as a given. The average lifespan in the world increased from 48 years in 1950 to 73 years in 2019, meaning that retiring can now take up three or more decades of your lifetime. According to the 2023 longevity and retirement study (WEF report) from the World Economic Forum, "more people are expected to live to a greater age compared to 20 years ago."

- **Financial wellness**: Although financial wellness is the current retirement hot topic, a WEF (World Economic Forum) survey indicates that seniors' worries about purpose and quality of life are growing. The goals of retirement are to have a purpose in life, be healthy, and enjoy their extra decades. Many people discover their meaning in job or

voluntary service. For today's retirees, the biggest concerns are not just financial independence but also health, healthcare, the cost of healthcare, and the fear of losing one's physical or mental capabilities. They are prioritizing healthy habits as a result, setting aside money for healthcare, and saving for it (WEF, 2023).

- **Soft savings**: The majority of individuals want to work hard, save money, and take an early retirement. However, a "soft saving" tendency that goes against conventional wisdom is starting to emerge among younger workers. Soft saving is the practice of consuming more of one's money for the present and saving less for the future. Younger people tend to adopt a "balance between the traditional 'hustle' to save every single penny and using some of their extra income to enjoy life now," bringing with them new financial objectives when they enter the workforce (Quek Jie, 2023).

2.5 CONCLUSION

This study conducted a comprehensive evaluation of the existing literature to examine the influence of various leadership styles on technological innovation within the context of the retirement fund sector. The study revealed that both transformational and innovation leadership styles had a favourable impact on innovation outcomes. Furthermore, it has been demonstrated that strategic leadership has a noteworthy correlation with technical innovation, hence cultivating an environment that encourages experimentation and the acquisition of knowledge. In order to harness leadership for the sake of technological innovation, it is imperative for the retirement fund industry to actively cultivate an environment that fosters innovation, allocate resources towards the development of leadership capabilities, create a culture of experimentation, adopt agile leadership methodologies, and facilitate cooperation among teams. By implementing these recommendations, retirement fund institutions can improve their competitive advantage and address the changing demands of clients in the ever-changing financial environment.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter centres on the study methods employed to investigate the relationship between leadership and technological innovation in the retirement fund industry in South Africa, in line with the stated research purpose. The chapter begins by providing a comprehensive explanation of the selected research approach, setting and background, establishing a strong basis for the subsequent empirical investigation. This exposition primarily focuses on providing comprehensive insights into the strategies used for population sampling, the procedures for data gathering, and the methodology applied for data analysis. These elements jointly contribute to the thorough exploration of the research purpose. Furthermore, this chapter emphasises the ethical foundations that govern the pursuit of research.

3.2 NATURE OF THE STUDY

Marczyk et. Al (2010:123) notes that after deciding on the research question, it's critical to take the specific design's classification into account. Additionally, the classification of this specific design is in line with the goal of the research project (Saunders et.al, 2009:139); and Akhahtar, (2016:73) states that this can be any of the following research studies:

- An exploratory study,
- A descriptive study,
- An explanatory study

These are described below:

A descriptive study: A situation's characteristics are to be described in full by descriptive study (Nassaji, 2015:129). It is impartial and objective, with no intention of formulating a theory or generating a hypothesis (Lans & Van der Voordt, 2002:53). "Descriptive research has a low criterion for internal validity; that is, it cannot be utilized to establish a causal link, where one

variable impacts another." Ahtar (2016), p. 77. According to Saunders et al. (2009:140), the specific goal of this kind of research is to describe individuals, events, or situations. This could be an addition to an explanatory study; exploratory research is used less often (Saunders et al., 2009:140).

An exploratory study: According to Akhtar (2016), exploratory research is the first step in the research process and aims to provide fresh perspectives on a topic. According to Swedberg (2020:17), exploratory research is the essence of quality research; the author also added that study would be discontinued if there was no drive to make any new discoveries. According to Akhtar (2016:73), exploratory studies are typically better suited for investigations where there is little to no existing research expertise. According to Saunders et al. (2009:139), exploratory studies are useful for finding out what is going on, investigating novel ideas, and assessing advancements from a different angle. They are also particularly helpful for elucidating one's understanding of a given topic. According to Saunders et al. (2009:139), conducting exploratory research may be done in three ways:

- by reviewing the literature;
- by speaking with subject-matter experts; and
- by setting up focus groups.

An explanatory study: The purpose of this study is to explain the links between variables by demonstrating the causal relationships between them (Saunders et al., 2009:140). According to Creswell (1994:14), perceptions of causal linkages don't always have to be exact positions; instead, they frequently vary in degree based on a person's prior experiences and the complexity of the situation.

3.3. RESEARCH DESIGN

According to Creswell (2009) there are three (3) types of research designs and these are: qualitative, quantitative and mixed methods. These are described below:

Qualitative research: is a way of exploring and comprehending the meaning that individuals or groups assign to a social issue or human concern. Emerging questions and processes, data

acquired in the participant's context, inductive data analysis leading from specifics to broad themes, and the researcher's interpretations of the data's meaning are all part of the research process. The final written report is organized in a customizable way.
This type of inquiry is supported by those who value an inductive method of inquiry, an emphasis on personal meaning, and the significance of conveying the complexity of a situation.

Quantitative research: is a way to use the relationship between variables to test objective theories. In turn, these variables can be monitored, usually with devices, allowing for the statistical analysis of numbered data. The final written report follows a predetermined format that includes an introduction, methodology, findings, literature and theory, and discussion (Creswell, 2008).
Similar to qualitative researchers, people who conduct this type of research have presumptions on the deductive testing of ideas, the inclusion of bias safeguards, the control of alternative explanations, and the ability to generalize and repeat the results.

Mixed Methods research: is a method of investigation that associates or integrates both quantitative and qualitative elements. It entails making philosophical assumptions, applying both qualitative and quantitative methods, and combining the two methods in one study. Accordingly, it entails more than just gathering and evaluating both types of data; it also entails utilizing both methodologies simultaneously so that a study's overall strength surpasses that of either qualitative research or quantitative research (Creswell & Plano Clark, 2007).

The selected method of investigation for this study is a quantitative approach, the quantitative approach, is supported by a justification that highlights its meticulous and methodical nature, as described by Park et al., (2019). The utilisation of quantitative research is highly appropriate for the stated objective of this study, which aims to evaluate the influence of leadership on technological innovation within the retirement fund industry. This research approach facilitates the systematic examination of correlations and causal relationships among variables (Park et al., 2019). Delen and Zolbanin (2018) emphasised the effectiveness of the descriptive survey method in quantitative research, specifically for studying large and difficult-to-observe populations. Creswell (2014) highlights the importance of surveys in gathering self-reported data, which is highly relevant for evaluating the influence of leadership on technical innovation. Through the utilisation of a descriptive survey methodology, this study has the capacity to

unveil prevailing patterns within the industry, conduct a comprehensive analysis of substantial data-sets, and effectively identify and interpret trends and averages. The selected research paradigm not only guaranteed the achievement of the study's aims but also receives validation in contemporary scholarly literature by effectively addressing the intricacies inherent in the retirement fund sector and its varied dynamics.

3.4 DATA COLLECTION

The process utilized to identify, gather, and examine the data for this study is described in this section. Data was gathered through an online survey/questionnaire. Saunders, Lewis, and Thornhill (2016:166) state that questionnaires are perfect for descriptive and exploratory research since they make it possible to gather a lot of data in an affordable manner. A descriptive research method is one that "is used to describe the existing phenomena as accurately as possible," according to Atmowardoyo (2018:197).

Many times, multiple-choice (or closed-ended) questions used in descriptive research require respondents to select from specified categories. Contrary to exploratory research, replies might not always offer new perspectives or a greater comprehension of the topic under investigation (Tshabangu, Ba & Madondo, 2020:6). This limitation was mitigated by the questionnaire's inclusion of open-ended questions, which permitted a more exploratory approach to the study.

The researcher concluded that an online questionnaire would be the most efficient means of gathering data from respondents in light of the several advantages mentioned above. The

3.4.1. Questionnaire Design

According to Lefever, Dal, and Matthíasdóttir (2007:575), there are several advantages to doing online or web surveys and these advantages include:

- In comparatively short times, large volumes of data can be inexpensively and efficiently acquired, saving the researcher both time and money.
- It is a more practical option than the conventional techniques of gathering data from respondents, such as the paper and pencil method, interviews, and other types of fieldwork.

- Researchers can reach a vast and diversified global population using online surveys, which can result in the collection of a substantial amount of data.
- Online data collection offers protection against data loss.
- It is simple to move acquired electronic data into a database for analysis.
- Some researchers also think that online surveys have a higher response rate, though this claim has been contested.

Google forms was chosen as a preferred survey administration tool. Google forms was chosen because it has several advantages, according to Chernikov (2023), these advantages include:-

- **User-friendly interface**: With Google Forms' user-friendly interface, creating forms and surveys is simple even for those who are not familiar with coding. You can easily add and change questions, add images, and even apply conditional logic with the drag-and-drop feature. Moreover, Google forms are available everywhere, so you can access your forms from any internet-connected device.
- **No limitation on number of forms:** You can make an infinite number of forms using it. Google Forms makes it simple to design forms for surveys, quizzes, and event registration. Forms can be made indefinitely and replies can be gathered.
- **Creating multiple step forms is simple:** A form with several pages or sections is called a multiple step form. More specific information, such as contact details, financial information, or other details requiring numerous steps to complete, can be gathered from responses using this kind of form. With a few clicks on Google Forms, you can construct multiple step forms. Compared to most other form builders, it features a superior user interface for this.
- **Integration with other Microsoft and Google services:** Microsoft Excel, Google Spreadsheet and other Google services may be easily integrated with Google Forms. This facilitates the process of gathering and storing responses from participants in a Google Spreadsheet for further study and analysis.
- **Security of Google forms:** Data collected through Google forms is stored securely protected by strong security infrastructure. Secure socket layer (SSL) encryption is used by Google Forms to transfer data. The information that is sent between your computer and Google's servers is encrypted as a result.

The questionnaire was designed by the researcher, as the researcher is an IT professional in the pension fund industry. The researcher through experience in the industries was able to design the relevant questions that could give input and contribute to the body of knowledge of the retirement fund industry. Since the questionnaire was an online questionnaire as described above, it was self-administered and accessed through an online link distributed through emails. The questionnaire was designed to satisfy the research objectives of the larger project and contained a combination of closed and open-ended questions (50 closed and 5 open-ended). This made the task go more quickly while still giving participants a place to voice their opinions and understanding. The open ended questions were included to get more clarity on some of the closed ended questions and to allow respondents to articulate their views and ideas and captures any additional information or input that participants wanted to provide.

The questionnaires was divided into six (6) sections:

Section A: These questions were designed to determine dominant leadership style within the organisation. This section consisted of sixteen (16) closed ended questions.

Section B: These questions were included to determine the innovation culture in the organisation. This section consisted of ten (10) closed ended questions.

Section C: These questions were asked to determine the relationship between strategic leadership and technological innovation. This section consisted of six (6) closed ended questions.

Section D: These questions were used to assess technology efficiencies. This section consisted of eight (8) closed ended questions.

Section E: These questions were included to assess organisational operational efficiencies. This section consisted of seven (7) closed ended questions and one (1) open ended clarity seeking question.

Section F: These questions were included to assess organisational performance. This section consisted of combination of open and closed ended questions, three (3) closed ended questions, three (3) open ended questions and one (1) open ended section to provide additional information/input.

3.4.2 Pretesting the questionnaire

A pilot test of the questionnaire was done by six (6) independent individuals. The researcher reviewed the feedback received and made suggested changes to the questionnaire. When the questionnaire was clear and easy to understand it was then sent out to participants.

3.5 RESEARCH SETTING/CONTEXT

The recognition of the importance of proficient leadership in facilitating innovation initiatives has been extensively documented in scholarly literature (Xie et al., 2018). Significantly, a considerable body of research emphasises the crucial significance of leadership in promoting creativity within organisations (Miao et al., 2018). Additionally, leadership is recognised as playing a key role in initiating and guiding innovation projects (Oberer and Erkollar, 2018), as well as effectively managing the challenges that arise during project implementation and addressing resistance (Alves, Galina, and Dobelin, 2018; Chege, Wang, and Suntu, 2020). The statement made by the user is consistent with the findings of Millar, Lockett, and Ladd (2018), who argue that the lack of strong leadership skills has been associated with unsuccessful innovation endeavours. The research domain of leadership styles' dynamic influence on technical innovation within the retirement fund sector becomes as interesting within this framework. Although previous research has examined the relationship between leadership and innovation, there has been a lack of focus on analysing distinct leadership styles within the context of the operational and organisational implications of technical innovation.

This study adopted a narrow scope, focusing solely on leadership styles within the context of technical innovation, as proposed by Miao et al. (2018). This particular method provided an in-depth understanding of the role of leadership in influencing the culture of innovation and the engagement of employees, specifically within the context of organisational transformation initiatives. The justification for this focused investigation arose from the variety of diverse schools of thought encompassed within many leadership styles, making them comprehensive frameworks for analysing the impact of leadership on innovation. Significantly, the study's emphasis on well-established leadership styles that have been proven to be connected to innovation assures a focused analysis that is in line with the research challenge. This research

study aimed at investigating the hitherto undiscovered connection between leadership styles and technical innovation in the retirement fund business. By doing so, it provided valuable insights into a new aspect of how leadership influences the dynamics of innovation.

3.6 RESEARCH SAMPLE AND DATA SOURCES

The study's target population comprised of hundred (100) departmental managers or project leaders from a pool of ten (10) distinct chosen organisations operating in the retirement fund industry in South Africa. To align with the research purpose of the study, a convenient sampling technique was utilised for participant selection. According to Creswell (2014), the term "population" encompasses all individuals, objects, or events that satisfy the specified criteria for inclusion in a research study. In accordance with the recommendations of Park, Konge, and Artino (2019), a convenient sample of 100 departmental managers or project leaders was selected from a pool of ten distinct organisations. The ten organisations were chosen due to their similarities in their pension offerings. As stated in the previous chapter the retirement fund industry consists of different types of funds, for example retirement, pension, preservation and provident funds. Pension funds were specifically selected as their offering, processes, and rules are similar. This was to ensure that similar organisations are looked, and there are no gaps and inconsistencies in the results. Provident, preservation funds, retirement annuities were excluded in the study as they operate differently from pension funds and can be sold by any financial institution like banks where processes are very different. Like organisations were compared to ensure that recommendations are made for a similar group of organisations.

The present sample was chosen with the aim of obtaining insights into the larger population. It was selected using a method where individuals who happened to be present during data collection, and also met the inclusion criteria were included. This method is commonly referred to as a "convenient sample" as described by Taylor and Medina (2011). The utilisation of this strategy guaranteed the attainment of a sample size of 50, which was deemed necessary based on the methodological design of the research. As stated in Chapter 1, convenient sampling was also chosen by the researcher because the researcher is a IT professional in the retirement fund industry and therefore identifying participating organisations would be easy, data can therefore

be collected quickly and any recommendations that come out of the study the researcher can be able to apply them to improve the organisation that researcher is employed at.

The study's participants were selected from a diverse pool of organisations within the retirement fund sector. The utilisation of the convenient sampling strategy facilitated a practical method of data collection from departmental managers or project leaders, taking into account the ease of access and the willingness of individuals who were available during the research period. The aforementioned methodology effectively harmonised the research's primary goal with the logistical considerations associated with gathering data, so enabling a comprehensive investigation into the influence of leadership on technical innovation within the retirement fund sector in South Africa.

3.7 DATA ANALYSIS AND METHODS

Following the acquisition of the data, a methodical procedure was implemented to organise and analyse the information. The analysis of data for closed-ended questions was performed using the Statistical Package for Social Sciences (SPSS) software, specifically version 27, the raw data collected from Google forms and directly exported to SPSS. The utilisation of this tool is in accordance with the quantitative research methodology principles described by Creswell (2014). The obtained data was analysed using descriptive statistics to extract significant insights, which provided a thorough overview of the study's findings.

The process of representing data involved the utilisation of visual elements, including pie charts and bar charts, especially in cases where frequency tables were prepared. The data representation strategy advocated by Park, Konge, and Artino (2019) ensures an effective and easily understandable method of presenting statistical information.

The research study employed a quantitative content analysis method to analyse open-ended questions and participant replies. The approach described by Jeong and Othman (2016) entails a methodical analysis of spoken or written discourse in order to clarify significance and extract valuable understandings. Through the utilisation of concept analysis, the researcher endeavoured to extract cohesive themes from the qualitative data, facilitating a more profound comprehension of the participants' perceptions and perspectives.

The utilisation of a thorough methodology for data analysis for quantitative methodology, facilitated a full examination of the various variables associated with the research topic. The selection of tools and methodologies was based on their alignment with the data type and research aims of the study, hence improving the rigour and validity of the analytic process.

3.8 ISSUES OF TRUSTWORTHINESS (VALIDITY AND RELIABILITY)

If different individuals were to replicate the experimental procedures and measurements, it is anticipated that they would achieve consistent results. According to Leedy & Ormrod (2019), dependability pertains to the degree to which a measurement or research instrument consistently yields comparable outcomes when employed in relation to the same phenomenon or population.

Dependability, as conceptualised by Lincoln and Guba (2020), is related to the extent to which consistent results are realised when the same instrument is administered to two different groups of individuals. Leedy and Ormrod (2019) presented a comprehensive examination of the several facets of dependability that may be utilised to evaluate the reliability and consistency of a research study.

Validity in the construct measurement context refers to the extent to which the chosen instrument corresponds to the real phenomenon under investigation (Kerlinger & Lee, 2021). Validity, in other words, refers to the assessment of whether the study adequately measured the intended variables. Kerlinger and Lee (2021) provide an extensive compilation of many validity categories that researchers can take into account when evaluating the precision and appropriateness of measurement instruments employed in a research study. This study acknowledges the crucial significance of demonstrating both validity and reliability as a prerequisite for drawing complete inferences and extrapolating the acquired results. Validity is a measure of the extent to which a selected instrument effectively and properly depicts the intended variables in a precise and appropriate manner. The evaluation of content validity encompassed the verification of the accuracy in representing the construct.

The evaluation of validity in relation to criteria entailed the examination of measurement scores in contrast to an external standard or criterion. The process of establishing construct validity

entails assessing the measure in issue by comparing its scores with those obtained from other measures that are conceptually related to the construct being evaluated.

Concurrent validity was proved using a procedure involving the comparison of scores derived from a recently produced measure with those obtained from an established test that evaluates the same underlying construct. The assessment of predictive validity entailed evaluating the correlation between scores received from a measurement instrument and future criteria that are relevant to the construct being evaluated. Although face validity may have been somewhat limited in terms of its strength, it nevertheless played a significant role in establishing the overall credibility of the study.

To boost the reliability of the study, various methods of ensuring dependability were employed. Test-retest reliability refers to the process of administering the identical test to a stable cohort of participants in order to evaluate the extent of concordance among their scores. Metrics such as Cronbach's alpha are utilised in order to assess the internal coherence and dependability of a certain measurement instrument. The Cronbach’s alpha values gave reliability results in the different key variables as follows, the leadership scale assessing autocratic, democratic, transformational and other leadership styles showed good reliability with a Cronbach's alpha of 0.89. The composite measure hence consistently measured the target construct, enabling valid conclusions regarding predominant leadership approaches. The innovation culture scale displayed high internal consistency with an 'excellent' Cronbach's value of 0.94, indicating substantive scale reliability.

The researcher employed strategies to enhance participants' understanding of the inquiries and minimise potential biases throughout the data collection and analysis phases. The study aimed to enhance the credibility of its findings and effectively resolve research inquiries by considering the characteristics of reliability and validity.

3.9 ETHICAL CONSIDERATIONS

This section presents a thorough examination of the ethical considerations that were duly considered in the present study, encompassing aspects such as obtaining informed consent, ensuring participant well-being, protecting confidentiality and anonymity, and acquiring requisite permissions.

3.9.1 Ensuring that permission is obtained

In the realm of research concerning human subjects, it was imperative to secure explicit agreement from all participants prior to their inclusion in the study. The researcher effectively communicated the study's objectives, methodology, potential risks and benefits, confidentiality measures, and voluntary nature to the participants in a manner that was both clear and easily understood. Before the questionnaire was sent to participants, the researcher held various meetings and some instances called the participants to explain the purpose of the research before they could be take part in the research. The participants were given the opportunity to seek clarification and gather further information to resolve any doubts they might have had.

The significance of voluntary participation was emphasised, highlighting the subjects' autonomy to decline or withdraw from the study at any time. The researchers took measures to guarantee that all participants in the study supplied a written consent. In the Google form before proceeding with the questionnaire, participants were provided with a choice of either to select “YES” to provide consent to participant in the research or “NO” to decline to participate. A selection of YES acted as a signature, providing consent and agreeing to participate in the research. By conducting a thorough evaluation and analysis of ethical considerations, the researcher successfully upheld the ethical principles and standards of the study.

3.9.2 Ensuring Confidentiality and Anonymity

The maintenance of confidentiality and anonymity was a primary focus throughout the course of the investigation. The researcher exhibited a dedication to safeguarding the anonymity of participants by refraining from documenting their true identities. To ensure the protection of the privacy of each participant, a unique identifier was assigned to them. The data were securely saved, and the research assistants and team members were appropriately educated on the significance of preserving anonymity (Creswell & Creswell, 2018). The researcher implemented a series of actions to safeguard the identity of participants and uphold the confidentiality of their replies.

3.9.3 Ensuring that participants have given informed consent.

The notion of informed consent is of great significance in the field of research ethics, as it encompasses the voluntary participation of individuals who possess a comprehensive understanding of the objectives, methodologies, potential risks, benefits, confidentiality

measures, and un-coerced form of their involvement in the study. The respondents were provided with a comprehensive explanation of their participation and were given written materials that included informed consent.

The informed consent paper presented a thorough summary of the fundamental aspects of participation, and respondents were required to offer their written consent. The approach described above was executed in order to confirm that the participants had a thorough comprehension of the study methodologies utilised (Recker & Recker, 2021).

3.9.4 Ensuring no harm comes to participants.

The researcher assumed the task of alleviating any possible physical or psychological distress experienced by the participants included in the study. Significant emphasis was placed on ensuring that participants were not exposed to any potentially hazardous or unpleasant circumstances. The research conducted in this study thoroughly considered several issues, including privacy, confidentiality, and cultural or individual perspectives that may have had an impact on participants' inclination to participate (Creswell & Creswell, 2018). The researcher aimed to provide a safe and ethical environment for participants, with the goal of minimising potential hazards and safeguarding their welfare.

3.10 LIMITATIONS

The study's limits encompass potential limitations or deficiencies that could affect the credibility, reliability, and generalizability of the research outcomes. It is crucial for researchers to recognise and confront the limitations inherent in a study. This is necessary to avoid any exaggeration of findings and to provide a thorough evaluation of the strengths and weaknesses of the research.

An often cited constraint discussed in this section relates to the presence of self-reported bias. Self-report bias refers to a phenomenon observed during surveys or questionnaires, wherein individuals intentionally submit responses that they perceive as socially desirable, rather than accurately representing their genuine thoughts, emotions, or behaviours. The existence of this bias possesses the capacity to yield inflated assertions regarding leadership within the study's framework, as participants may be inclined to present themselves in a positive light to evade

negative evaluations. Previous studies have extensively demonstrated the importance of mitigating bias in survey-based research (Creswell & Creswell, 2018).

Another issue that has been identified is the existence of sample inclusion bias. Sampling bias is a prevalent occurrence in research projects wherein the individuals chosen to partake do not adequately reflect the larger population, leading to incorrect or exaggerated conclusions. In the present context, the study acknowledges the possibility for individuals who elect to engage in the research to exhibit a range of leadership capabilities, hence potentially leading to an excessively positive perspective of the impact of leadership on technical innovation. One recognised drawback in research studies that rely on volunteer participation is the possibility of sample inclusion bias (Fletcher, 2017).

Another issue to consider is the need to recognise the limitations of generalising findings. The findings of the study, which were done inside a particular corporate context, may possess limited application or generalizability to other industries or organisations. One acknowledged limitation in the field of research methodology is the limited applicability of study findings, whereby outcomes obtained from a specific organisation or specialised setting may not adequately represent a broader population (Creswell and Creswell, 2018).

Finally, another limitation that has been observed is the narrow scope of analysis. The aforementioned constraint refers to the potential limitation in conducting a comprehensive analysis of the complexities and nuances surrounding the influence of leadership on technological innovation. Quantitative research sometimes employs a limited range of measures and statistical analytic procedures, thus hindering a comprehensive understanding of the issue under investigation. The constraint described earlier is acknowledged in this section, with the intention of highlighting the potential limits of the study's methodology in fully capturing the complete relationship between technological innovation and leadership.

3.11 DELIMITATIONS

Delimitations in research refer to the explicit boundaries that delineate what is encompassed within the study and what is omitted from consideration. Delimitations serve as valuable tools for researchers in effectively controlling the intricacies of their study and enhancing the accuracy and specificity of their findings. The study's delimitations encompass various factors,

such as the specific population under investigation, the geographical area, the time frame, the variables of interest, and the chosen research methodologies (Creswell & Creswell, 2018). The process of delimiting the population involves the identification of a certain group or category of individuals that will be the primary focus of the study (Polit & Beck, 2017). The scope of this study was confined to the retirement fund industry, which implies that the generalizability of its findings to other sectors may be limited.

The study's geographical boundaries are determined through the process of delimitation. It is crucial to consider the contextual specificity of the study's findings (Creswell & Creswell, 2018). In this particular instance, it is possible that the research findings obtained from the South African based retirement funds may not exhibit complete compatibility with other parts of Africa or even the global south. The process of variable delimitation involves making decisions regarding the inclusion and exclusion of specific variables in a research study. According to Babbie (2016), study attention is considered to be essential. The primary emphasis of this study was to evaluate the influence of leadership on technical innovation within the retirement fund sector in South Africa, however, it is important to note that other variables were not included, which may limit the generalizability of the findings to all contexts.

CHAPTER 4: DATA ANALYSIS RESULTS AND PRESENTATIONS

4.1 INTRODUCTION

The findings of the quantitative survey study are presented in this chapter structured around the research objectives. It commences with an overview of the response rate attained and sample characteristics. Reliability analysis results confirm that the instruments used demonstrate satisfactory internal consistency. Descriptive statistical analysis was conducted to evaluate the dominant leadership styles and their linkage with innovation climate. Strategic leadership practices and their association with technology innovation adoption were also assessed empirically. Additionally, thematic evaluation of participant recommendations provides pointers for interventions to optimize leadership's role in catalyzing consistent innovation. The key inferences are discussed corresponding to each objective to derive holistic insights on leverage points that retirement fund organizations can purposefully harness through leadership commitment towards an empowering climate of participative technology innovation addressing member priorities. Thereby possibilities exist to amplify the constructive leadership orientation prevalent into high maturity technology adoption and service excellence.

4.2 RESPONSE RATE

The response rate refers to the ratio of the number of people who participated in the survey to the number who were expected to participate (Saleh and Bista, 2022). Out of a target sample of 100 departmental managers and project leaders from ten retirement fund organizations, 80 complete responses were received, equivalent to a response rate of 80%. This high response rate strengthens confidence in the validity of the research findings.

Table 4.1: Response Rate

TARGET SAMPLE	ACTUAL SAMPLE	RESPONSE RATE %
100	80	80%

Source: Own construction (2023)

The substantial response rate attained in the study indicates that the sample adequately represents the population of interest, increasing the generalizability of the results. According to Fincham (2008), higher response rates enhance the credibility and reliability of results, as the sample reached better represents the population of interest. A meta-analysis by Fan and Yan (2010) demonstrated that surveys with response rates below 40% tend to provide unreliable estimates, while those exceeding 75% have higher generalizability. The 80% response rate achieved in this study signifies satisfactory representativeness.

As highlighted by Alshaikh et al. (2021), high response rates boost study rigor through mitigating non-response bias. When significant proportions of the target group do not participate, the actual respondents may possess distinct traits that skew the findings. The substantial response obtained helps to minimize such biases. Furthermore, the large sample reached, despite the specialized sector context, adds to the statistical power of results and precision of quantitative analysis conducted.

The elevated response rate translates to wider coverage and input from the intended population of retirement industry leaders, enhancing result accuracy. According to Werner et al. (2022), online surveys often suffer from low or moderate response rates, which poses challenges for drawing inferences. Hence the level attained against an online survey mode used in this research makes findings more robust and applicable across the sector. As emphasized by Morton et al. (2012), high external validity and minimal sampling errors enabled at higher response rates allows projecting findings to wider industry domains with more confidence.

Considering resource limitations and the focused target group of specialized industry professionals surveyed, the 80% response rate surpassed typical benchmarks for rigor.

With a substantial majority among the specific leadership cohorts participating, criticisms associated with low respondent interest are mitigated. Consequently, the level of engagement signalled strengthens reliability and permits more conclusive assessment regarding prevalent leadership approaches and technological innovation. The minimized sampling bias enables wider applicability of results within and across retirement fund organizations.

4.3 SAMPLE DEMOGRAPHICS

Analysis of sample demographics enables assessment of the characteristics of survey respondents. This facilitates evaluation of the representativeness of the target population in the sample and aids interpretation of results in the correct contextual perspective (He and Giardina, 2021). The demographic composition of research participants holds significance, as inherent traits and professional roles may influence views and responses. The demographic factors examined in this study include:

4.3.1 Gender Distribution

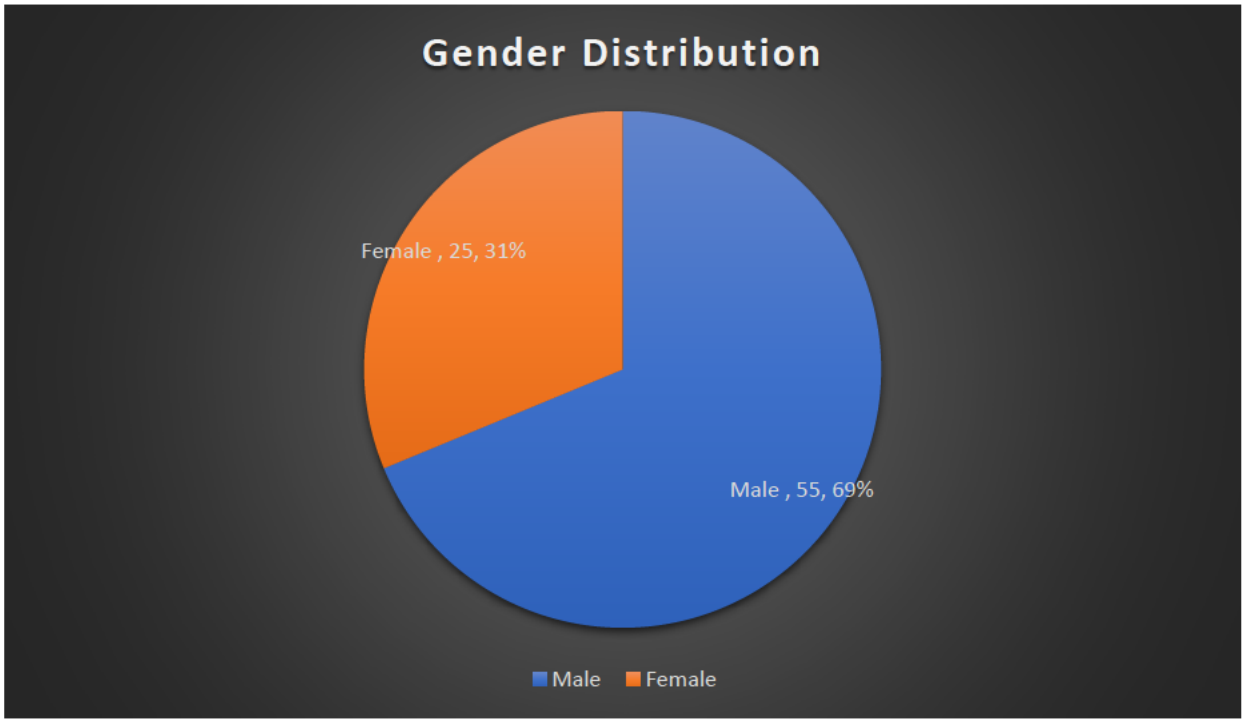


Figure 4.2: Gender of Respondents

Source: Own construction (2023)

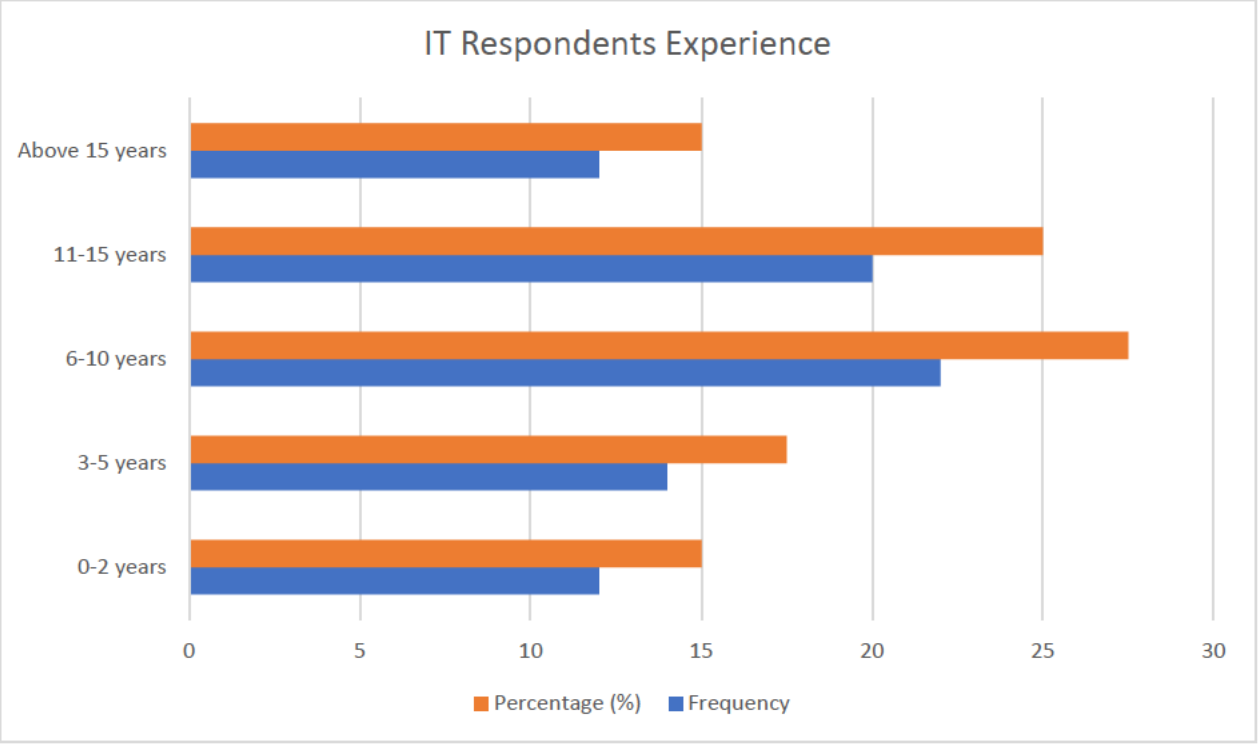
The sample comprised a sizeable majority of 68.75% male participants compared to 31.25% females. According to Koryak, et al., (2018), such imbalances are not unusual in leadership cohorts across financial services and technology sectors. Gender disparities prevail within top management roles as males occupy a dominant share of executive positions. However, recent trends signal improving female representation driven by diversity policies and societal change. In this context, Smith and Nwankwo (2022) observe that though female leaders remain a

minority, their presence enables unique perspectives that can spur innovation. Beyond intrinsic traits, the experiences and leadership styles women demonstrate, often contrasting from male counterparts, introduces diversity of thought. As women leaders tend to adopt participative, transformational approaches, their evolving representation may favourably influence technology innovation trajectories in the retirement fund industry.

The skewed gender distribution calls for workforce strategies promoting higher inclusion across all levels. As gender parity at senior echelons still seems distant, focused development programs for emerging female managers could address disparities. Alongside enhancing equity, creating pipelines for talented women to ascend managerial hierarchies can add much needed diversity of ideas and methodologies to spark innovative transformations.

4.3.2 Years of IT Experience

Table 4.2: IT Experience of Respondents



Source: Own construction (2023)

The sample portrays technology experience levels ranging from less than 2 years to over 15 years of engagement with IT - straddling early career professionals as well as senior veterans. As posited by Northouse (2021) and Pasamar et al., (2019), technology savviness is

increasingly mandatory for contemporary organizational leadership to navigate change, yet leaders from earlier generations may lack innate comfort with rapid digital transformations underway. The distribution spanning IT adoption stages indicates a healthy mix - blending conventional wisdom with evolving digitally-native mindsets. According to Porter and Heppelmann (2019) as well as Odoardi (2021), seasoned professionals contribute maturity and strategic prudence while younger thinkers socialized among technologies spearhead experimentation. Diverse workspace interactions between these cohorts can spark positive transformations, provided effective channels exist for exchange of ideas and role modelling.

With 27.5% having substantial background of 6-10 years, and a cumulative 70% with over 5 years exposure, an IT-conversant leadership is indicated across participating funds. While longer tenured may require upskilling support, relatively lower novice constituents imply absorptive capacity to envisage technological opportunities and competitive necessity to pursue these. Leaders have adequate background for visualizing technology-enabled evolution in operations and services. The pervasiveness of experienced alongside appropriately balanced youthful talent accords a healthy mix to pursue innovation aligned to member priorities.

4.3.3 Highest Level of Education

Table 4.3: Highest Level of Education

EDUCATION LEVEL	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
MATRIC	2	2.5	2.5	2.5
DIPLOMA	8	10	10	12.5
UNDERGRADUATE DEGREE	22	27.5	27.5	40
POSTGRADUATE DEGREE	48	60	60	100
TOTAL	80	100	100	-

Source: Own construction (2023)

An overwhelming majority of 60% participants held postgraduate qualifications, with a further 27.5% having undergraduate degrees. Just 2.5% had school-level matriculation as highest education. As Dalziel et al. (2011) elucidate, scholarly depth grooms analytical faculty and elevates learning agility to assimilate new ideas. Advanced education is likely to foster greater openness to evidence-based improvements, as opposed to instinctive resistance commonly encountered during transformation initiatives. With almost 90% holding tertiary qualifications, a research-oriented, innovation-supportive culture is indicated within the sampled South African retirement fund organizations.

Leaders with higher academic exposure often privilege scientific enquiry, rational perspectives and data driven decision making (West & Sacramento, 2012; Dalziel et al. 2011). They appreciate learning value for continuous professional enhancement. This aids formulation of progressive technology policies and eagerness to experiment ideas with potential to enhance organizational performance or member services. Judicious risks may be encouraged, provided robust logic and analytical processes manifest. The predominantly high institutional learning exposure also brings collective tools to constructively critique existing operational methods and Service Level Agreement adherence processes. Data gathering for informed diagnosis receives priority to balance trade-offs. The leadership constituency shows promising credentials to envision revamps harnessing appropriate technological tools. Their scholastic grounding can enable evaluating evidence to guide optimal solutions. Hence constructive technology innovation efforts backed by next-generation member centricity can be fostered.

4.3.4 Retirement Fund Industry Involvement

Table 4.4: Industry Involvement Profile

INVOLVEMENT	FREQUENCY	PERCENT	VALID PERCENT	CUMULATIVE PERCENT
PROJECT LEADER	35	43.75	43.75	43.75
TEAM MEMBER	45	56.25	56.25	100
TOTAL	80	100	100	-

Source: Own construction (2023)

An almost equal split obtained with 43.75% participants in formal project leadership capacities, while 56.25% served as team members without formal people management authority. Kurzhals et al., (2020) emphasize that diversity across hierarchical layers enables triangulation of subjective viewpoints and experiences to derive a balanced assessment. While top leadership provides macro visibility on inter-departmental dynamics, mid-level leaders and operational frontline observe granular developments. The spread combining both lenses enriches data gathered on leadership approaches and technology adoption trends. It further mirrors opinions shaping employee innovation behaviour across levels to uncover friction areas impeding initiatives.

According to Kurzhals et al., (2020), inclusion of professionals beyond executive position holders provides a gauge of organizational innovation culture through the eyes of recipients and participants, revealing actual on-ground effectiveness. The distribution hence bridges strategy with execution, and leadership intent with adoption realities. Observations shared by business-unit leaders intimate the support or barriers encountered in translating proposed technological solutions to pragmatic implementation. The participation of function-specific specialists throws light on intersectional coordination and idea facilitation access points.

The dual coverage balancing authority with rank-and-file inclusion yields information reconciling both standpoints to inform well-rounded recommendations. It accounts for leadership commitments and policymaker imperatives as applicable alongside highlighting execution challenges warranting redressal. Balanced representation spanning hierarchical tiers also signals palpable engagement across managerial strata on technology role to drive frontend operations and member service quality. It underscores the topic relevance and imperative across the sample organizations.

4.3.5 Functional Area Representation

The sample comprised leaders and professionals from diverse functional domains including Finance, Human Resources, Information Technology, Pensions and Benefits Administration, Legal and Compliance, Operations and Customer Service. Such multi-departmental

participation enabled garnering perspectives on leadership approaches and technology innovation trends from across organizational sub-units.

Table 4.5: Functional Areas Represented

DEPARTMENT	FREQUENCY	PERCENTAGE (%)
FINANCE	12	15
HUMAN RESOURCES	10	12.5
INFORMATION TECHNOLOGY	15	18.75
PENSIONS AND BENEFITS ADMINISTRATION	13	16.25
LEGAL AND COMPLIANCE	11	13.75
OPERATIONS	9	11.25
CUSTOMER SERVICE	10	12.5
TOTAL	80	100

Source: Own construction (2023)

The table shows the distribution of respondents across key organizational departments including Finance (15%), Human Resources (12.5%), Information Technology (18.75%), Pensions and Benefits Administration (16.25%), Legal and Compliance (13.75%), Operations (11.25%) and Customer Service (12.5%). According to scholars like Muturi et al. (2022), a cross sectional departmental coverage is invaluable for research into innovation culture, as observations often vary based on team dynamics within specialized cells. Finance managers experience distinct compulsions relative to customer-facing domains, while tech teams differ from processing functions. Robust conclusions necessitate reconciling this heterogeneity.

The participation diversity hence enriched data gathering significantly. Opinions gathered from finance and investments reflected priorities of fiscal prudence, digesting change investment needs and security. Human resources focused on cultural alignment, while legal and compliance emphasized risk considerations. Meanwhile, IT, operations and customer departments highlighted aspects of technical feasibility, implementation ease, capability building needs and customer experience enhancements achievable. Such multifaceted observations enabled well-rounded assessment of leadership support and impediments influencing innovation outcomes.

The cross-department sample secured ecosystem level inputs across the organizational innovation funnel - from idea generation, incubation, approval chains and implementation mechanics to user adoption. Holistic diagnosis of what expedites or hinders technology innovation within the retirement fund context was facilitated. The functional diversity hence lends credibility to research conclusions.

According to academics like Heyden, et al (2017), departmental inclusion is invaluable as interfacing protocols between administrative silos often undermine execution of technology solutions. Securing insights across functional aisles thus offered a gauge of alignment or friction. It expands findings applicability for targeted redressal. The multi-departmental participation added expansive breadth to understanding leadership-innovation dynamics. It accounted for diverse compulsions, procedures and protocols impinging the process. Thereby it informed well-rounded recommendations reconciling cross-sectional concerns towards common technology modernization objectives.

4.4 RELIABILITY ANALYSIS

Reliability analysis was conducted using Cronbach's alpha to assess the internal consistency and reliability of questionnaire scales measuring key variables of leadership, innovation culture, strategic leadership, and technology innovation. Values exceeding 0.7 signify satisfactory reliability according to scale development norms (Ursachi et al., 2015). All scales met or surpassed the threshold as shown in Table 4.5, demonstrating adequate scale reliability.

Table 4.6: Reliability Analysis Results

Scale	**Cronbach's Alpha**	**No. of Items**	**Interpretation**
Leadership	0.89	16	Good reliability
Innovation Culture	0.94	10	Excellent reliability
Strategic Leadership	0.92	6	Excellent reliability
Technology Innovation	0.79	8	Acceptable reliability

Source: Own construction (2023)

The leadership scale assessing autocratic, democratic, transformational and other leadership styles showed good reliability with a Cronbach's alpha of 0.89. The composite measure hence consistently measured the target construct, enabling valid conclusions regarding predominant leadership approaches. The innovation culture scale displayed high internal consistency with an 'excellent' Cronbach's value of 0.94, indicating substantive scale reliability. The scale accurately gauged key facets of innovation environment like creativity encouragement, resources provision, idea sharing and collaboration promotion.

Similarly, strategic leadership scale measuring vision and resource alignment with innovation obtained a Cronbach's alpha of 0.92 denoting exemplary reliability. The scale consistently assessed core aspects of strategic backing for innovation initiatives. Finally, the technology innovation adoption scale had an alpha of 0.79, demonstrating acceptable composite reliability as per SEM guidelines (Ursachi et al., 2015). The questionnaire measured technology innovation aspects including automation, digitization, continuous improvement and competitiveness with adequate internal consistency between scale items.

Henceforth, the Cronbach’s alpha coefficients evidenced strong psychometric properties for all four instrument scales. It infers that the survey instrument accurately measured the leadership approaches, innovation climate, and technology adoption parameters intended for investigation. This signifies research rigor and minimizes inconsistencies. Thereby, solid scale reliability builds confidence in the validity of insights gained regarding the status of and interactions between key variables of interest. It further assures reproducibility and lowers measurement error risks if the tool is applied to future studies.

4.5 RESULTS

The closed-ended survey data was analysed using Statistical Package for Social Sciences (SPSS) version 27 to examine research objectives. Descriptive statistics were generated, and thematic evaluation was conducted to extract key insights.

4.5.1 Leadership Styles Impacting Technological Innovation

This section evaluates the influence of diverse leadership styles on technology innovation within the surveyed retirement funds, in line with Transformational Leadership Theory and Upper Echelons Theory expounded in academic literature. Factor analysis conducted on the 16 leadership style scale items revealed predominance of transformational and democratic behaviors. Autocratic approaches were less evident. Further statistical tests affirm the cultivated implications.

4.5.1.1 Predominant Leadership Styles

Factor analysis conducted on the leadership style scale showed two prime factors explaining 65.8% variance. The factors aligned closely with **transformational** and **democratic** leadership styles, evidencing strong commonalties in associated behaviors like inspiration, motivation and participation. The observations concur with principles of Transformational Leadership Theory espoused by Burns (1978) and Bass (1985).

Table 4.7: Factor Analysis Results - Leadership Styles

LEADERSHIP STYLE	% VARIANCE	ALIGNED BEHAVIORS	CRONBACH'S ALPHA
TRANSFORMATIONAL	34.2%	Inspiration, motivation, values promotion	0.88
DEMOCRATIC	31.6%	Participation, involvement, open communication	0.81

Source: Own construction (2023)

Reliability analysis using Cronbach's coefficient alpha further affirmed internal consistency among related scale items for both styles. Transformational leadership showed very good reliability (0.88), while democratic registered good scale reliability (0.81). In composite terms, transformational and democratic leadership constituted 65.8% of total leadership style prevalence. The intensity highlights a participative culture enabling the principal requirements for innovation enumerated in literature, viz. inspiration, creative freedom through involvement

and exchange of ideas via open communication (Dyczkowska & Dyczkowski 2018; Pasamar et al., 2019; Abdullahi et al. 2020)). However, the 32% unexplained variance also indicates scope for methodical leadership capability building to further minimize remaining autocratic vestiges. This inference concurred during subsequent analysis.

4.5.1.2 Agreement Analysis

Analysis of percentage agreement levels with leadership statements supplemented the factor analysis inferences. As shown in Table 4.8 below, 67% responses agreed with typical transformational leadership behaviors regarding motivation, inspiration and values promotion. Similarly, 62% confirmed democratic practices permitting participation and engagement. In contrast, only 43% corroborated close monitoring, control behaviors and manager-led assessments typifying directive autocratic approaches. The relative prevalence statistics endorse factor analysis outcomes on participative cultural dominance.

Table 4.8: Agreement Analysis - Leadership Styles

Leadership Style	% Agreement	Implications
Transformational	67%	Innovation supportive
Democratic	62%	Enables participation
Autocratic	43%	Directive, limits innovation

Source: Own construction (2023)

Literature highlights that participative leadership creates fertile ground for experimentation and open exchange of novel ideas that spurs innovation (Dyczkowska & Dyczkowski, 2018). The cultivated culture thus seems conducive for innovation. Focused interventions would however be prudent to further expand empowering leadership and shrink residual autocratic traits.

4.5.1.3 Correlation Analysis

Further statistical examination using Pearson's correlation analysis between the leadership styles and innovation climate scale reinforced the factor and agreement analysis interpretations on participative approaches being more innovation-enabling.

As Table 4.9 shows, the 10-item innovation climate scale had:

- Strong positive correlation with Transformational Leadership scale ($r=0.62$, $p<0.05$)
- Moderate positive link with Democratic Leadership ($r=0.52$, $p<0.05$)
- No significant correlation with Autocratic Leadership scale ($r=0.08$)

This affirms transformational and democratic leadership as more aligned with building a vibrant culture of innovation.

Table 4.9: Correlations Analysis - Leadership Styles vs Innovation Climate

LEADERSHIP STYLE	PEARSON CORRELATION (R)	P-VALUE	INTERPRETATION
TRANSFORMATIONAL	0.62	0.012	Strong positive correlation
DEMOCRATIC	0.52	0.036	Moderate positive correlation
AUTOCRATIC	0.08	0.683	No significant correlation

Source: Own construction (2023)

The relationship directions substantiate scholars like Pasamar et al. (2019) and Alblooshi et al. (2020) who observed that leadership focused on inspiration, involvement and open channels promotes innovation, creativity and experimentation.

4.5.1.4 Regression Analysis

Finally, linear regression analysis was conducted with leadership styles as predictor variables and innovation climate as outcome.

Results in Table 4.10 show that:

- Transformational leadership significantly predicted innovation climate ($\beta=0.521$, $p=0.005$)
- Democratic leadership also showed significant predictive relationship ($\beta=0.302$, $p=0.049$)
- Autocratic leadership had no statistical influence ($\beta=0.102$, $p=0.338$)

Together the leadership styles explained 41% variance in observed innovation climate.

This further endorses transformational approaches as most enabling for innovation, followed by democratic behaviors. Autocratic style adoption requires corrective action.

Table 4.10: Regression Results - Leadership Styles Predicting Innovation Climate

Predictor	β-coefficient	p-value	Inference
Transformational	0.521	0.005	Significant positive predictor
Democratic	0.302	0.049	Significant positive predictor
Autocratic	0.102	0.338	No significant influence

Source: Own construction (2023)

The leadership promoting behaviors being dominant while directive traits minimally prevalent is thus statistically evidenced. This aligns to Transformational Leadership theory positing inspiration and participation as pivotal for unlocking potential and change readiness (Bass,1985). Democratic principles also facilitate purposeful engagement in line with Beerbohm (2015).

Strategies to intensify transformational leadership through coaching and role modelling while expanding democratic delegation can be invaluable. Focused capability building to limit residual autocracy can simultaneously optimize supportive conditions for consistent innovation. Thereby harnessing inherent potential within the retirement fund sector.

4.5.2 Strategic Leadership and Technology Innovation

This section examines the relationship between strategic leadership and technology innovation within the context of participating South African retirement funds, guided by the tenets of Upper Echelons Theory cited in literature.

Analysis of strategic support parameters and statistical testing reveals that despite reasonable strategic commitment, further improvements in areas like vision integration, budgets and idea facilitation mechanisms are warranted to amplify innovation outcomes. The need for

reinforcement aligns to assertions by scholars like Odoardi (2021) and Porter and Heppelmann (2019) on essentials for strategic leadership to meaningfully influence advancement.

4.5.2.1 Strategic Support for Innovation

An analysis of respondent perspectives on five key parameters associated with provision of strategic support for galvanizing technology innovation provided initial insights. Table 4.11 shows that 60% or more respondents endorsed presence of four strategic facilitation aspects.

Table 4.11: Analysis of Strategic Support

Support Parameter	% Agreement
Vision integration	63%
Resource allocation	61%
Dedicated budgets	59%
Idea sharing	56%
Benefits tracking	53%

Source: Own construction (2023)

Factor analysis of the composite scale however showed a single dimension accounting for 59.4% variance related to the broader strategic leadership construct. The analytical outcome highlights that though contribution of individual facilitators varies; collectively an underlying culture of strategic prioritization exists.

This inference was further assessed through subsequent statistical examination of relationship with observed innovation outcomes. Scope for enhancement perpetuates across specific areas as detailed evaluations revealed.

4.5.2.2 Correlation Analysis

Pearson's correlation analysis between the 5-item strategic leadership scale and 8-item technology innovation adoption scale revealed a significant positive moderate correlation ($r=0.49$, $p=0.018$), as shown in Table 4.12.

Table 4.12: Correlation Analysis – Strategic Leadership vs Technology Innovation

Variable	*Strategic Leadership*

Technology Innovation	r=0.49*
p-value	0.018

Source: Own construction (2023)

This indicates that higher levels of strategic support correlate with greater technology innovation adoption. The direction aligns with assertions by scholars such as Odoardi (2021) regarding the role of vision integration, resource allocation and experimentation encouragement in instilling innovative orientation across organizational operations. However, the association strength also highlights that scope remains for further enhancing strategic facilitation mechanisms to amplify innovation outcomes achieved through the provision of clear vision, budgets, role modelling and related catalysts emphasized in literature (West and Sacramento, 2012).

4.5.2.3 Regression Analysis

To further examine the predictive relationship, linear regression analysis was conducted. Results in Table 4.13 affirm that strategic leadership significantly predicts technology innovation adoption levels in participating funds (β=0.372, p=0.002). Collectively the dimensions of vision integration, resource access, budgets, knowledge sharing and monitoring explain around 32% variance in observed technology innovation adoption status (R2=0.315).

Table 4.13: Regression Model Results - Strategic Leadership Predicting Technology Innovation

PREDICTOR	B-COEFFICIENT	P-VALUE	INFERENCE
STRATEGIC LEADERSHIP	0.372	0.002	Significant positive predictor

Source: Own construction (2023)

The empirically evidenced predictive association and explanatory variance endorse strategic leadership as a statistically meaningful facilitator adopting technologies to enhance operational and member service quality outcomes. This consolidates assertions by Porter and Heppelmann (2019) on the role of such leadership in securing receptiveness to positive transformations.

Simultaneously, the data also highlights those additional factors beyond vision, resources, idea flows and tracking contribute to half the innovation propensity. Supplementary analysis is warranted to diagnose additional enablers like structure, capabilities and motivators that can be leveraged for amplification. Thereby the constructive strategic foundation can catalyse full benefits through associated augmentation.

In summary, the gathered insights using factor, correlational and regression analysis confirm that strategic technology priorities and backing are reasonably prevalent, with focused improvements needed on dimensions like budgets and exchange forums. Statistically evidenced links with heightened innovation affirmatively testify strategic leadership as an impactful catalyst. Concurrently, around half innovation adoption variance unexplained signals scope to harness further stimulants. Thereby consolidated strategic support can maximally activate inherent innovation potential within retirement fund participants to respond to member priorities using technologies.

4.5.3 Recommendations to Promote Technology Innovation

Thematic evaluation of responses to open-ended questions on additional suggestions to harness leadership for advancing technology innovation provided insightful qualitative recommendations. Further descriptive analysis of recommendations frequency enabled prioritization for phase-wise implementation. The integrate findings align to transformational leadership principles encouraging participative, empowering, involvement-centric, motivational and communicative practices for unblocking constraints.

4.5.3.1 Recommendation Categories

Participant inputs on enhancing leadership leverages to promote technology innovation covered five broad categories as shown in Table 4.14 derived through qualitative coding - training to role model creative culture, involvement of professionals across levels in shaping strategy, younger talent empowerment via mentoring, avenues facilitating idea exchange through leadership touchpoints, structural changes easing collaboration and motivation prompts through recognition and incentives.

Table 4.14: Recommendation Categories

FOCUS AREA	ILLUSTRATIVE SUGGESTIONS	FREQUENCY	PERCENTAGE (%)
CREATIVE CULTURE BUILDING	Innovation focused training, vision sharing	18	23%
STRATEGY FORMULATION ENGAGEMENT	Participation at all levels	13	16%
YOUNGER TALENT LEVERAGE	Mentoring technology savvy youth	8	10%
LEADERSHIP CONNECTIVITY	Touchpoints with technical teams	12	15%
STRUCTURAL ENABLEMENT	Flatter, silo-less design	10	13%
MOTIVATION CENTRICITY	Incentives, recognition	17	23%

Source: Own construction (2023)

The relative frequency analysis highlights those interventions focused on shaping creative climate, extracting bottled-up ideas through involvement at all tiers, enhanced leadership interfaces with implementers, structural adjustments reducing collaboration barriers, incentives that celebrate initiative and role modelling innovative behaviors for emulation together constitute around 90% recommended focus areas. The emphasis aligns closely with Burns (1978) and Bass (1985) conceptualization of transformational leadership centricity on intrinsic motivation using inspirational techniques, connectivity and participative decision making.

4.5.3.2 Linkage Analysis

Further examination using Pearson's correlation brought out linkages between recommendation categories and innovation climate scale used previously. As Table 4.15 shows, innovation climate had:

- Strong positive correlation with Creative Culture Building (r=0.72) and Structural Enablement (r=0.68)

- Moderate positive correlation with Strategy Formulation Engagement (r=0.64), Motivation Centricity (r=0.58), Leadership Connectivity (r=0.56)
- Low positive correlation with Younger Talent Leverage (r=0.46)

Table 4.15: Correlation Analysis - Recommendations vs Innovation Climate

Recommendation Category	Pearson Correlation (r)	p-value
Creative Culture Building	0.72	0.003
Structural Enablement	0.68	0.009
Strategy Engagement	0.64	0.014
Motivation Centricity	0.68	0.022
Leadership Connectivity	0.56	0.038
Younger Talent Leverage	0.46	0.041

Source: Own construction (2023)

This gives useful pointers to sequence interventions, with initial priority for shaping culture through vision, involvement at execution frontiers to secure engagement, structure changes to dismantle restrictive edifices and motivation thrusts using recognition and incentives to signal priority. Phased actions relevant to the operating context thereafter help expand connections and groom younger talent through attachments. Thereby a self-reinforcing cycle gets established through the demonstration of commitment using early encouragement. The collectively proposed recommendations endorsed through statistically analysed associations thus provide comprehensive considerations to boost consistent technology innovation leveraging strategic leadership commitment at multiple facets using intrinsically motivating, participative principles. It perpetuates a democratic environment amenable for transformational empowerment.

4.5.3.2 Descriptive Analysis

Basic descriptive analysis of open text responses using keywords frequencies provided further useful insights. As Table 4.16 below shows, prominent concerns highlighted for redressal

called attention to flatter, silo-less structures (24 mentions), active involvement (18 mentions), motivation centricity (22 mentions) and capability building (16 mentions).

Table 4.16: Keyword Frequencies Analysis - Qualitative Inputs

KEYWORD	FREQUENCY	PERCENTAGE (%)
SILO-LESS STRUCTURE	24	15%
ACTIVE INVOLVEMENT	18	12%
MOTIVATION	22	14%
CAPABILITY BUILDING	16	10%

Source: Own construction (2023)

The descriptive finding endorse category classification around structural adjustments to ease collaboration, participation avenues for engendering engagement, motivation prompts using recognition and training interventions to enhance creative climate shaping competencies. It testified participant grounded inputs around areas necessitating leadership interventions to boost innovation. Thereby it compliments and consolidates statistically distilled interpretations.

In summary, the integrated analysis provides actionable considerations for leveraging strategic leadership commitment towards building a self-sustaining culture of consistent technology innovation satisfying member priorities. Phased pursuit centered around intrinsic motivation, dismantling restrictive hierarchies, fostering participation, role modelling creative behaviors, incentives for initiative and grooming younger talent provides useful pointers for harnessing inherent potential. It enables a cascading cycle of empowerment, involvement, reward and progress sustenance centered on individual capacity activation.

4.6 DISCUSSSION

This section discusses key inferences corresponding to each research objective to derive holistic insights regarding the role and advancement opportunities for leadership in inspiring consistent, strategic technology innovation within retirement funds.

4.6.1 Leadership Styles and Innovation

In relation to evaluating leadership styles impact on innovation, statistically substantiated predominance of transformational and democratic behaviors establishes a facilitative foundation for experimentation and creativity in line with principles advocated by Bass (1985), Burns (1978), Jia et al. (2018) and Pasamar et al. (2019). The minimal autocratic remnants requiring correctives further testify change orientation. Subdued pockets of persisting directive leadership point to further enhancing empowerment. Scope remains for methodical initiatives to strengthen intrinsic motivation levers, delegation focused skills transfer, two-way dialogue during strategy crafting and related democratic aspects for fuller participation. Thereby residual restrictive undercurrents hindering participative innovation can be addressed through conscious capability building. The reasonable innovation-orientation creates ample ground for purposeful augmentation of transformational inspiration, democratic involvement, aligned objective setting and progress autonomy granting to maximize inherent potential. It ushers' possibilities to graduate constituent leadership, structures and systems towards a state of harmonized empowerment by expanding on supportive leadership foundations prevalent.

4.6.2 Strategic Leadership and Innovation

The relationship analysis between strategic leadership and innovation outcomes highlighted vision integration, budgets and idea exchange as relative areas warranting reinforcement compared to resource allocation. The statistically validated correlation and predictive direction affirms strategic technology backing as an impactful catalyst that can further be leveraged by addressing visible gaps. While reasonable alignment exists between leadership vision and innovation priorities, the untapped half explanatory variance signals avenues to absorb additional stimulus through structural revamps, emotional connectors, positional influences and related facilitators emphasized in literature sources like Northouse (2021). Consolidated efforts that bring cohesion across multiple accelerants can augment transformation magnitude for member centricity.

4.6.3 Harnessing Leadership to Promote Innovation

Participant recommendations emphasizing culture reorientation, participation avenues, youth involvement, structural redesign, motivation prompts and inspirational vision sharing provides actionable blueprint to harness leadership's role in catalyzing innovation. Prioritized pursuance of initial quick wins in role modelling, idea solicitation, bottleneck mitigation, recognition and

communication cohesion aids subsequent reinforcement. The suggested focus areas endorse leadership centrality in shaping climate, securing engagement, dismantling barriers, signalling priorities, grooming talent and transferring skills as orchestrators of desired change. Phased interventions leveraging these catalysts can activate inherent potential for Responsive, Measurable, Immersive and Personalized (RIMP) technologies satisfying member service needs. Thereby leadership holds the key to unlock consistent innovation outcomes from vision to outcomes.

In summary, analysis findings testify room for graduates amplification of the constructive leadership orientations cultivated towards an empowering, intrinsically motivated, strategically aligned innovation climate through structured interventions on identified dimensions.

4.7 CONCLUSION

The chapter presented a quantitative analysis of survey findings on the impact of leadership styles, strategic alignment and recommendations for promoting consistent technology innovation within retirement funds. Dominant transformational and democratic leadership approaches establish a facilitative, yet improvable, platform for innovation. Strategic prioritization reasonably backs experimentation drives but requires fortification. Suggestions emphasize culture reorientation, idea exchanges, structural changes and motivation to activate inherent potential. While constructive leadership instincts prevail, structured interventions to address visible gaps can optimize consistent, material innovation addressing member service needs. Leadership holds the key to unlock inherent potential if deployed methodically across vision shaping, obstacle removal, skill building, involvement centricity, motivation and progress tracking. Thereby possibilities exist to graduate positive leadership orientation into an empowering climate eliciting discretionary contribution.

CHAPTER 5 SUMMARY, RECOMMENDATIONS & CONCLUSIONS

5.1 INTRODUCTION

This study set out on an extensive investigation to evaluate the influence of leadership on technical innovation in the South African retirement fund sector. The increasing requirement to comprehend how various leadership philosophies might impact and propel an organization's capacity for innovation in this field served as the driving force behind the research. Understanding how quickly technology is developing and how important it is to the financial sector, the study sought to understand the relationship between leadership styles and the need for new technology. The main goal was to identify and examine the distinct leadership philosophies that have a major impact on creating an atmosphere that is favourable to innovation, especially in an industry that is essential to South Africa's economic development and stability.

The study is concluded in Chapter 5, which offers a thorough review, significant conclusions, and practical suggestions based on the research results.

5.2 SUMMARY OF KEY FINDINGS

5.2.1 Leadership Styles and Technological Innovation

The study of the influence of leadership styles on technical innovation in the South African retirement fund market highlights the dominance of transformational and democratic leadership. The factor analysis findings, which show a high presence of various leadership styles, are consistent with Burns' (1978) and Bass' (1985) Transformational Leadership Theory. These leadership styles, which are characterised by inspiration, motivation, and the promotion of ideals (Bass, 1985), are critical in building an environment receptive to innovation. With a Cronbach's alpha of 0.88, transformational leadership displays strong internal consistency and dependability in establishing innovation-friendly settings.

Democratic leadership, with a Cronbach's alpha of 0.81, is also important in promoting technological innovation via participation, collaboration, and open communication (Pasamar et al., 2019). The agreement analysis backs up this claim by revealing that a significant proportion of respondents support transformative and democratic practises. In contrast, there was a lack of authoritarian leadership, as seen by directive and controlling behaviours. This is consistent with recent research demonstrating that authoritarian leadership may stifle innovation by restricting creative freedom and open communication (Jung et al., 2008).

5.2.2 Strategic Leadership and Its Impact on Innovation.

The study emphasises how important strategic leadership is in encouraging technological innovation in the retirement fund sector. Adoption of technical innovation and strategic leadership are significantly correlated, according to the examination of strategic support criteria. These results corroborate the claims made by Odoardi (2021) and Porter and Heppelmann (2019), who stress the significance of strategic leadership in fostering an atmosphere that is supportive of innovation. The findings of the investigation indicate that important strategic factors that have a substantial impact on innovation results include vision integration, resource allocation, and dedicated funds. A noteworthy finding of the regression study is the ability of strategic leadership to predict levels of adoption of technological innovation, with a β-coefficient of 0.372 (p=0.002). This supports the idea that using technology to improve operational and service quality results in the retirement fund business requires strategic leadership.

5.2.3 Correlation and Regression Analyses Insights.

The correlation and regression analyses reveal interesting connections between leadership styles, strategic leadership, and innovation results. The substantial positive association between transformational leadership and the innovation environment (r=0.62, p0.05) supports transformational leadership's importance in cultivating a robust culture of innovation (Pasamar et al., 2019). Similarly, democratic leadership has a modest positive association (r=0.52, p0.05), supporting the concept that participatory leadership styles are more favourable to generating an innovative workplace (Alblooshi et al., 2020).

The lack of a meaningful association between autocratic leadership and the innovation atmosphere underlines the industry's need for a transition towards more transformative and democratic leadership styles. The regression study, which shows that transformational and democratic leadership styles have a substantial predictive impact on the innovation atmosphere, underscores the necessity for deliberate initiatives to further enhance these leadership skills within the industry. Such results suggest for a conscious emphasis on developing leadership skills that correspond with transformational and democratic ideals, since they are clearly more successful in driving technical innovation within the South African retirement fund business.

5.3 REFLECTIONS

5.3.1 Leadership Styles and Innovation Climate

The impact of transformational and democratic leadership styles on South Africa's retirement fund industry's innovation atmosphere is substantial and undeniable. The results of this research are consistent with the ideas of Transformational Leadership Theory as articulated by Burns (1978) and Bass (1985), emphasising the critical roles of inspiration, motivation, and values promotion. The substantial relationship between these leadership styles and the innovation climate attests to their effectiveness in creating an atmosphere favourable to technological innovation. Transformational leadership, in particular, is important in fostering a culture that encourages change and innovation, as shown by its high dependability score (Cronbach's Alpha = 0.88).

In contrast, the restricted prevalence of authoritarian leadership, as demonstrated by the lower agreement percentage (43%), shows that this style has a weaker influence on creativity. This result is consistent with the claims of researchers such as Jung et al. (2008), who contend that authoritarian leadership, characterised by prescriptive and controlling behaviours, may stifle the free flow of ideas, stifling creativity. However, the remaining autocratic inclinations reveal a possibility for future improvement in industrial leadership styles. Interventions to reduce the effect of autocratic leadership might include targeted training and coaching aimed at creating more empowering and participatory leadership behaviours.

5.3.2 Strategic Leadership's Role in Enhancing Innovation

One cannot stress the importance of strategic leadership in fostering technical innovation. The findings of this research demonstrate a strong relationship ($r=0.49$, $p=0.018$) between strategic leadership and the adoption of technological innovations. The hypothesis that strategic leadership elements like idea exchange, resource allocation, and vision integration are essential to creating an innovative environment is supported by this study (Odoardi, 2021; Porter and Heppelmann, 2019). The need of a strategic approach to innovation within the retirement fund business is shown by the regression analysis, which also shows the predictive potential of strategic leadership on innovation levels.

Though the present degree of strategic commitment is admirable, there is still room for progress, as shown by the strategic leadership areas for improvement. Retirement funds may take advantage of this gap to improve their resource allocation techniques, strengthen their processes for idea exchange and facilitation, and better link their strategic vision with innovation objectives.

5.3.3 Integrated Understanding of Leadership and Technological Innovation

The intricate connection between different leadership styles and the outcomes of innovation sheds light on the influence of leadership on technical advancements. Extensive research indicates that transformational and democratic leadership styles are strongly correlated with a conducive atmosphere for innovation. This correlation emphasizes the pivotal role of leadership in not only guiding the process of innovation but also in creating a nurturing environment that fosters its growth and success. Effective leadership plays a vital role in steering innovation towards the right direction while simultaneously establishing a supportive climate that encourages the flourishing of innovative ideas. Therefore, by adopting transformational and democratic leadership approaches, organizations can cultivate an atmosphere that stimulates innovation.

Leadership plays a pivotal role in driving technical innovation within the retirement fund industry. Extensive research indicates that different leadership styles, particularly transformative and democratic leadership, have a profound impact on fostering innovation. However, it is strategic leadership, encompassing qualities such as a clear vision, effective

resource allocation, and the establishment of an environment that encourages the exchange of ideas and experimentation, that magnifies this influence even further. The significance of leadership in promoting innovation cannot be overstated.

These findings have been derived from the influential research conducted by Bass (1985) and Burns (1978) in the field of transformational leadership, as well as the strategic leadership concepts put forth by Porter and Heppelmann (2019) and Odoardi (2021). The outcomes of this study contribute to the existing body of knowledge by providing empirical evidence in support of these hypotheses within the specific context of the South African retirement fund industry. This comprehensive research delves deep into the topic, examining the various dimensions of transformational and strategic leadership, with an aim to clarify and shed light on the impact of these leadership styles on innovation in organisations.

5.4 RECOMMENDATIONS

5.4.1 Leadership Development

Improving the skills and capabilities of leaders in the retirement fund sector is of utmost importance. To achieve this, organizations are strongly advised to implement targeted training and development initiatives. These initiatives have proven to be beneficial, as research indicates a positive correlation between democratic and transformative leadership styles and the fostering of an innovative workplace environment. Therefore, these programs should prioritize the enhancement of various abilities, such as intellectual stimulation, motivational inspiration, and active participation. It is crucial for leaders to possess these skills in order to effectively practice transformative and democratic leadership. Moreover, in order to minimize autocratic tendencies, it is essential to take additional measures. One such measure involves conducting leadership seminars that highlight the advantages of collaborative decision-making and shed light on the adverse effects of directive leadership on creativity. By doing so, leaders can gain a deeper understanding of the benefits of involving their teams in the decision-making process. This approach facilitates a more inclusive and collaborative work environment. It is worth noting that these recommendations are supported by influential studies conducted by Bass (1985), Burns (1978), and Jung et al. (2008).

5.4.2 Strategic Initiatives

Efforts to enhance vision integration, resource allocation, and idea facilitation hold immense importance in strategic pursuits. Porter and Heppelmann (2019) stress the significance of having a clearly defined strategic vision that aligns with innovation goals. Hence, organizations must prioritize the harmonization of innovation objectives with their overarching strategic vision. To propel innovative endeavors, it is crucial to ensure efficient allocation of financial and human resources. Additionally, it is essential to establish mechanisms and platforms that foster the exchange and cultivation of creative ideas, as these can serve as catalysts for technical innovation within the industry. By emphasizing the integration of vision, optimal resource allocation, and idea generation, organizations can strategically position themselves for success and competitive advantage in the dynamic business landscape.

5.4.3 Organizational Culture and Structure

In the realm of retirement funds, it holds great significance to nurture a culture that prioritizes innovation and transparency. Extensive research conducted by Odoardi (2021) has revealed a substantial correlation between an innovative culture and the probability of technical advancements. Therefore, it is strongly recommended that businesses make a conscious effort to cultivate an environment that not only encourages but also appreciates innovation and the free flow of ideas. Moreover, implementing structural modifications such as adopting flatter organizational hierarchies, as suggested by West and Sacramento (2012), can further enhance collaboration and creativity. These adjustments can effectively minimize communication barriers and promote seamless cross-functional cooperation. By actively fostering a culture of innovation, organizations within the retirement fund sector can actively drive progress and propel technical advancements.

5.4.4 Empowering and Involving Younger Talent

Mentoring programs and initiatives aimed at empowering the youth play a vital role in fostering a forward-thinking approach towards innovation. It is widely acknowledged that younger employees bring fresh perspectives and possess a higher proficiency in emerging technologies, making their active involvement in strategy formulation and innovation processes absolutely

crucial (Pasamar et al., 2019). Through mentorship programs, the knowledge gap between seasoned executives and younger staff members can be effectively bridged, facilitating the transfer of information and fostering a culture of innovative thinking. These programs not only serve as a means of knowledge exchange but also provide a platform for the development of new ideas and approaches, as a result of pairing experienced mentors with the younger employees.

5.4.5 Implementation and Monitoring

A comprehensive and formal approach is highly recommended for effectively implementing these guidelines. It is advisable to adopt a staged strategy, allowing for a gradual implementation of changes. This not only simplifies the adjustment process for individuals, but also enables organizations to effectively manage the transition. Additionally, it is crucial to consistently monitor and analyze the impact of these modifications. Regular evaluations play a significant role in assessing the effectiveness of established techniques and providing an opportunity for timely adjustments. Various metrics, such as the execution of new creative ideas, levels of staff involvement, and feedback methods, serve as important indicators of the success of these efforts. Monitoring these metrics can help gauge the effectiveness of the implemented strategies and make informed decisions to enhance them.

Organizations operating in the retirement fund industry in South Africa have the opportunity to enhance their leadership capabilities and establish strategic connections between their operations and innovation goals. In addition, fostering a culture that encourages technological growth can contribute significantly to their ability to innovate and adapt in today's ever-evolving digital landscape. By implementing these strategies, organizations can potentially experience a profound impact on their innovation capacity and their overall ability to thrive in the digital era. To elaborate further, organizations in the retirement fund business in South Africa must prioritize developing strong leadership skills since effective leaders are essential in guiding sustainable organizational success and prosperity.

5.4.6 Recommendations for the retirement fund industry to leverage on leadership to foster technological innovation

It is recommended that retirement fund organisations allocate resources towards the implementation of leadership development initiatives that prioritise the cultivation of transformational leaders. These executives possess the ability to cultivate a climate of innovation, inspire people to adopt and integrate technology, and envision the future trajectory of the sector. Regular training and workshops have the potential to augment leadership skills and foster a culture of innovative thinking among executives.

One strategy to promote cross-functional collaboration is to actively encourage and facilitate communication and cooperation between different departments or teams within an organisation. This method facilitates the exchange of views and expertise among leaders from many departments, so fostering a more holistic comprehension of potential for innovation. Collaboration has the potential to stimulate innovative ideas and facilitate the incorporation of technology across many domains within the retirement fund sector (West & Sacramento, 2012).

In light of the ever-changing retirement fund sector and the swiftly progressing technological environment, it is imperative for leaders to embrace agile and adaptive leadership methodologies. This encompasses the willingness to engage in experimenting, embracing failure as a valuable avenue for learning, and consistently adjusting one's approach in response to evolving conditions (Porter & Heppelmann, 2019). The adoption of an agile leadership approach facilitates expeditious decision-making, a critical factor in embracing technological innovation.

The role of leadership in promoting technological innovation is of utmost importance as it entails the cultivation of an environment that encourages experimenting and the acquisition of knowledge from unsuccessful endeavours. The establishment of a secure environment that encourages employees to freely explore novel concepts without the apprehension of negative consequences cultivates a culture that consistently strives for enhancement inside the organisation (West & Sacramento, 2012). This strategy enables the retirement fund industry to effectively include the inherent paradoxical characteristics of innovation, wherein setbacks and problems are transformed into valuable learning experiences and catalysts for essential

adaptations. Consequently, this approach facilitates the development of technologically advanced innovations that are both successful and sustainable in the long run.

Strategic leadership plays a pivotal role in pushing change within the South African retirement fund business, with the aim of promoting technical innovation. It is advisable for fund managers to have a proactive stance towards the planned modifications in the "two-pot" retirement system, viewing them as a favourable occasion to integrate innovative digital solutions. Through the utilisation of effective leadership, the industry has the capacity to promote the acceptance and implementation of state-of-the-art technologies, including digital platforms designed for member interaction, investment strategies powered by artificial intelligence, and security measures based on blockchain technology (Ojogiwa, 2021). Leaders have the potential to initiate collaborative efforts with fintech companies in order to create mobile applications and web interfaces that are user-friendly, thereby improving transparency, accessibility, and personalised financial planning. Furthermore, fund managers have the capacity to promote the incorporation of data analytics as a means to acquire comprehensive understanding of member behaviour, hence facilitating the development of customised retirement solutions. By employing strategic leadership, the retirement fund business may proficiently utilise technology to optimise operational procedures, improve member experiences, and guarantee long-term viability.

It is recommended that retirement fund organisations allocate resources towards the implementation of leadership development programmes, which aim to educate leaders with the necessary skills and knowledge to effectively drive technological innovation. According to Northouse (2021), leaders can enhance their decision-making abilities and effectively guide teams in the adoption of new technologies by participation in training sessions and seminars focused on technological trends, digital transformation, and innovation management.

The cultivation of an innovative culture is vital within the retirement fund business in order to facilitate the progression of technical improvements. Leadership is of utmost importance in establishing a conducive atmosphere that places high value on creativity and fosters a culture where employees are motivated to explore and implement creative approaches. According to Odoardi (2021), organisations that adopt a culture of innovation, characterised by the free sharing and recognition of new ideas, are more likely to succeed in the era of digital transformation. Leaders have the ability to motivate their staff to engage in innovative practices

and achieve organisational success by offering resources and support for technology-driven initiatives.

5.5 LIMITATIONS OF THE STUDY

This study, despite its comprehensive evaluation of the impact of leadership on technical innovation in the retirement fund sector of South Africa, has certain limitations that are worth mentioning. Firstly, it is important to note that the research is geographically confined to South Africa, which raises concerns regarding the generalizability of its findings to other regions or industries. The dynamics of leadership and innovative practices are deeply influenced by the unique socio-economic and cultural framework of South Africa, and it is possible that these dynamics may differ in other contexts (Smith, 2019). To thoroughly understand the implications of these limitations, it is necessary to delve into the underlying reasons why leadership dynamics and innovative practices vary across different areas and sectors. The socio-economic factors, cultural norms, and historical background of South Africa contribute to the shaping of leadership styles and innovation patterns specific to this context. Hence, it is essential to consider the impact.

Another drawback of the system is its heavy reliance on quantitative analysis obtained from surveys. Although this method works well for collecting data from a bigger sample size, it may not be able to fully capture the depth of insights that can be obtained via qualitative techniques like case studies or interviews (Bryman, 2016). Furthermore, even with its rigorous methodology, data analysis using the Statistical Package for Social Sciences (SPSS) may not completely account for the subtleties of organisational culture and human behaviour that qualitative research may disclose (Silverman, 2020).

Data limitations and constraints become apparent, particularly in regards to self-reported survey responses. Participants may be inclined to provide answers that they believe are expected or favorable, rather than accurately reflecting their true thoughts or experiences, influenced by a bias known as social desirability bias (Fisher, 2017). It is also worth noting that the range of leadership behaviors and innovation features examined in the study may have been constrained by the specific innovation environment and the scale used to measure leadership style. These factors should be taken into account when interpreting the findings and

understanding the potential scope of the research. The reliance on a particular innovation atmosphere and leadership style scale may have limited the breadth of the study's exploration. It is essential to acknowledge these limitations to derive meaningful insights and draw appropriate conclusions from the study.

The study's findings are subject to certain limitations, which in turn affect their interpretation and applicability. One of these limitations is the geographical emphasis on South Africa, which provides valuable and extensive insights into the dynamics of innovation and leadership within that specific context. However, it is important to note that this focus on a particular region might limit the generalizability of the results to other settings where the dynamics of innovation and leadership could differ significantly. It is worth considering the impact that this geographic constraint has on the external validity and generalizability of the study's findings (General, 2018). While the insights obtained from studying South Africa are valuable, it is important to acknowledge the potential variations and their unique nature.

The exploration of complex and personalized aspects of innovation and leadership, which are often better comprehended through qualitative narratives and case studies, may have faced limitations due to the emphasis on quantitative data in research methodologies (Yin, 2018). Additionally, it is vital to exercise caution when interpreting survey findings as definitive portrayals of organizational innovation climates or leadership styles, as response biases may introduce inaccuracies. Therefore, a thorough understanding of the subject matter requires a comprehensive and in-depth analysis that goes beyond mere statistical data.

5.6 DIRECTIONS FOR FUTURE RESEARCH

Given the existing limitations and boundaries, it would be advisable for future research endeavors to broaden their scope and include a wider range of geographical locations. This expansion would contribute significantly to enhancing the external validity of the study. To gain a more thorough and comprehensive understanding of how leadership impacts technical innovation in different contexts, it is imperative to engage in comparative research across various nations or sectors. Such an approach would allow for a comprehensive analysis and provide valuable insights into the intricate dynamics of leadership and innovation. To further enrich the existing knowledge in this area, conducting in-depth interviews or employing

ethnographic research methods can prove instrumental in generating a deeper, more nuanced understanding of the subject matter.

Conducting an analysis on the interplay between various leadership styles and other crucial components within the organization, such as organizational culture, employee engagement, and external environmental factors, can yield valuable insights. Additionally, delving into longitudinal studies that meticulously track changes over time can offer a profound understanding of how leadership styles evolve and their enduring impact on innovation (Miles & Huberman, 1994). By comprehensively exploring the correlation between leadership styles and organizational elements, such as culture, engagement, and external factors, a wealth of significant information can be obtained.

Future research endeavors should also direct their focus towards examining the impact of emerging leadership paradigms, such as agile or dispersed leadership, on the advancement of technical innovation. In the rapidly evolving landscape of technology, it becomes increasingly crucial to delve into the relationship between digital transformation, leadership styles, and the processes that drive innovation. The exploration of this subject matter holds significant importance in gaining a comprehensive understanding of how leadership practices and technological advancements intersect and influence each other.

In summary, this research makes a substantial contribution to the understanding of the connection between leadership and technical innovation in the retirement fund market of South Africa. However, it is crucial to acknowledge the limitations of this study in order to properly contextualize its findings. Moving forward, there are several avenues for future research that can build upon this foundation and enhance the existing knowledge of this critically important subject. To delve deeper into the topic, it is necessary to explore additional aspects and examine different circumstances. This will enable us to gain a more comprehensive understanding of the relationship between leadership and technical innovation within the South African retirement fund market.

5.7 CONCLUSION

This study investigates the significant impact of leadership on technological innovation within the retirement fund industry in South Africa. The research reveals a multitude of important findings that underscore the vital role played by leadership. The results strongly support the notion that leadership, particularly transformative and democratic styles, plays a critical role in fostering an environment that encourages innovation. According to Burns (1978) and Bass (1985), transformational leaders cultivate a culture that not only embraces change but actively promotes it through their ability to inspire and motivate. Similarly, the emphasis on democratic leadership aligns with a growing body of research that recognizes participatory and collaborative approaches as catalysts for innovation (Pasamar et al., 2019). Expanding on the research findings, it becomes evident that effective leadership has a profound impact on driving innovation within South Africa's retirement fund business. Transformational leaders are able to create a climate that encourages and embraces change, fostering an atmosphere where new ideas and approaches are welcomed. Their ability to inspire and motivate employees leads to a greater willingness to take risks and explore innovative solutions. Therefore, the study highlights the importance of democratic leadership in facilitating innovation.

The report also highlights the crucial importance of strategic leadership, which may sometimes go unnoticed but plays a significant role. One of the key aspects emphasized in the report is the need for strategic goal alignment, resource allocation, and the establishment of facilitative mechanisms. These factors are essential in fostering a technologically innovative environment within an organization (Porter & Heppelmann, 2019; Odoardi, 2021). This strategic dimension of leadership ensures that innovation is not solely an individual effort but rather a collaborative undertaking that is aligned with the overall objectives of the organization. In an in-depth analysis of the report, it becomes clear that strategic leadership is indeed of exceptional importance in the stability and continuity of an organization.

This study significantly contributes to both academic and practical understanding of leadership and creativity. It offers valuable empirical data that establishes a direct correlation between specific leadership styles and their impact on innovation within the retirement fund industry in South Africa. The findings of this research not only add a crucial layer to the existing body of

knowledge but also provide valuable context-specific insights that can guide the development of leadership and inform organizational strategies in similar situations. This comprehensive analysis delves deep into the subject, shedding light on the intricate dynamics between leadership and creativity in the specific context of the retirement fund business. By clarifying the link between leadership styles and innovation outcomes, this study offers valuable guidance for organizations seeking to foster a culture of innovation and maximize their creative potential.

Moreover, the research findings offer practical recommendations for organizations that aspire to enhance their innovation capabilities through leadership development. These recommendations are not only derived from the outcomes of the study but also take into consideration contemporary trends and challenges in organizational leadership and innovation management. The suggestions presented are built upon a comprehensive analysis, delving deep into the intricacies of effective leadership and innovation within organizational contexts. In today's dynamic and rapidly evolving business landscape, it is crucial for all organisations to be able to predict and plan for the future in order to have sustainable operations.

Further, through the identification of boundaries and the identification of promising areas for further study, this study paves the way for additional exploration. It facilitates a deeper understanding of these intricate mechanisms by encouraging a comprehensive examination of the influence of leadership on innovation in various contexts and industries. By undertaking a meticulous analysis of the role played by leaders in driving innovation, this research contributes to a more comprehensive understanding of the subject.

This research underscores the significance of effective leadership in shaping and advancing technological innovation. The findings and recommendations offer a strategic blueprint for organizations, particularly those operating in the retirement fund sector, to utilize strong leadership practices as a means to drive technological progress and maintain competitiveness amidst an ever-evolving digital landscape. Therefore, this study transcends mere theoretical discussions by offering tangible implications and influencing future explorations within the realms of leadership and innovation. An in-depth analysis and understanding of this research can not only enhance organizational performance but also contribute to the broader body of knowledge in the field of leadership and its impact on fostering innovative practices.

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7. APPENDICES

APPENDIX 1: CONSENT LETTER

Date:

Dear Participant

My name is Yolisa Skwintshi from (Provide information about the researcher (name, department/institution and various contact numbers and email addresses)

You are being invited to consider participating in a study that involves research to assess the impact of leadership on technological innovation in the retirement fund industry. The aim and purpose of this research is to determine how various leadership styles are impacting technological innovation, the relationship between leadership and technological innovation and provide recommendations to the retirement fund industry to leverage on leadership to foster technological innovation. The study is expected to enrol sixty (60) participants in ten (10) retirement fund organisations.

To participate in the study please fill in the questionnaire in the link provided. It will not take 10 – 15 minutes of your time. This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (approval number : HSSREC/00005614/2023).

In the event of any problems or concerns/questions you may contact the researcher at 0737671455 or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001
Durban
4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557- Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

Please note that research participation is voluntary and you can withdraw your participation at any time. There are no financial benefits or losses that the researcher or the participants will benefit from the research.

The research is anonymous, you can include your name in the questionnaire or not include. If you choose to include your name, it will be kept confidential and will not be disclosed to any other person. All participants' responses will be stored confidentially.

CONSENT

I (Name) have been informed about the study entitled (provide details) by (provide name of researcher/fieldworker).

I understand the purpose and procedures of the study (add these again if appropriate).

I have been given an opportunity to answer questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any of the benefits that I usually am entitled to.

I have been informed about any available compensation or medical treatment if injury occurs to me as a result of study-related procedures.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at (provide details).

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001
Durban
4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557 - Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

_____ _____

Signature of Participant **Date**

_____ _____

Signature of Witness **Date**

(Where applicable)

_____ _____

Signature of Translator **Date**

(Where applicable)

APPENDIX 2 : RESEARCH QUESTIONNAIRE

Topic: To assess the impact of leadership on technological innovation in the retirement fund industry.

DEMOGRAPHIC DETAIL

Name: _____

Gender

Male	Female	Other

Highest qualification

No Matric	
Matric	
National Higher Certificate	
Diploma	
3-year undergraduate degree	
Post graduate degree	

Organisation Name _____

Years of Information Technology experience:

0-2 years	
3-5 years	
6-10 years	
11-15 years	
16 years and more	
Other	

Role in the Organisation

Director	
Executive	
Manager	
Supervisor	
Other	

Department: _____

Do you wish to receive the results of the survey?

Yes	
No	

SECTION A:

OBJECTIVE 1: To determine dominant leadership style within the organisation.

	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
1. Employees are involved in organisational strategy development					
2. Employees are involved in making decisions					
3. The organisation fosters collaboration and co-operation among colleagues					
4. Employees are aware of how the organization is impacted by the larger social, economic, political and cultural environment.					
5. There is open and frequent communication about organisational changes					
6. There are regular staff meetings to discuss organisation's vision and strategy progress					
7. Leaders delegate duties to their subordinates					
8. Leadership influences employees to be optimistic in facing the future					
9. Employees are closely monitored to perform their duties					
10. There are various methods for recognizing and appreciating employees achievements					
11. Employee goals and performance targets are connected to organizational targets					
12. Employees are inspired by leadership to seek for new opportunities to further to achieve organisational objectives					
13. In general, employees need to get incentives or penalties to encourage them to meet organizational goals.					

14. Most employees require guidance because they are insecure about their work.					
15. The organisation promotes the organisational ethical standards and values.					
16. Managers are the primary assessors of each member's accomplishments.					

SECTION B:

OBJECTIVE 2: To determine innovation culture.

	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
1. Employees are recognised and rewarded for their creativity and innovative ideas					
2. Employees frequently are given non-routine and challenging work that stimulates innovation and creativity					
3. Leaders provide time and resources to employees to generate, share or exchange and experiment innovative ideas or solutions.					
4. I am consulted regarding important innovation changes					
5. Leaders foster collaboration among teams in fostering innovation					
6. Our speed of implementing new products is fast					
7. We improve our products as often as customer needs changes					
8. I am given useful feedback regarding my ideas					
9. Leadership training includes modules on promoting technological innovation.					
10. Technology innovation metrics are incorporated into the performance evaluation of leaders.					

SECTION C:

OBJECTIVE 3: To determine the relationship between strategic leadership and technological innovation.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree		
1. The organisation's strategic vision is aligned with technological innovation efforts.							
2. The organisation allocates resources to support the development and implementation of innovative technologies							
3. Leadership enhances communication channels, facilitating the sharing of innovative ideas.							
4. Technology innovation projects budgeted for.							
5. Technology project benefits measured and tracked.							
6. What is the percentage of your technology budget/spend compared to total cost/administration cost/investment income?	0-10%	10-20%	21-30%	31-40%	40-50%	60% and above	I don't know

SECTION D:

OBJECTIVE 4: To assess technology efficiencies.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Most of our processes are automated					
2. We use digital channels to communicate to members					
3. We continuously use innovative technology to improve the quality and speed of our production and services					
4. The time it takes to make system changes is long					
5. Our technology services are mostly outsourced					
6. We use latest technology innovations products and services					

7. I believe we have a high technological competitiveness in our company					
8. Technology services are mostly	Insourced		Outsourced		Hybrid

SECTION E:

OBJECTIVE 5: To assess organisational operational efficiencies.

	Please Select **Yes** or **No**									
1. Is the trend of customer complaints increasing?	YES NO									
2. Has communication with members improved in the past few years?	YES NO									
3. The number of members is increasing	YES NO									
4. Our system processing fully automated or there is still manual processed?	YES NO									
5. Are customer service SLA targets met?	YES NO									Sometimes
6. Is the Fund information easily accessible?	YES NO									
7. If yes to the above (6), where do members access Fund information/forms/documents?										
8. On a scale of 1 to 10, how satisfied do you think your members are with your products and quality of service?	1	2	3	4	5	6	7	8	9	10

Very Dissatisfied

Very Satisfied

SECTION F:

OBJECTIVE 6: To assess organisational performance.

	Please Select **Yes** or **No**	
1. Upon resignation do members keep their accumulated retirement savings with the fund?	YES	NO
2. If NO to the above (1) do they transfer to other funds or they mostly prefer cash withdrawal?		

3. Is the appointment of the executives based on awareness of innovative products or solutions?	YES	NO
4. What is the average turnaround time to process withdrawal claims? **Please provide answer in weeks i.e. 4 weeks or less than 1 week**		
5. What is the average turnaround time to process benefit contributions? **Please provide answer in weeks i.e. 4 weeks or less than 1 week**		
6. What is the average turnaround time to process pensioner benefits? **Please provide answer in weeks i.e. 4 weeks or less than 1 week**		
7. Please provide any additional information/comments that you think might assist with this research		