

Investigating the influence of academic staff's resistance to change regarding technology readiness: The mediating role of technology self-efficacy

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DECLARATION

I, Ronel Fourie, declare that the dissertation, Investigating the influence of academic staff's resistance to change regarding technology readiness: The mediating role of technology self-efficacy, which I submit, is my work.

Signature of student: Signed on this 16th day of November 2023.

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ABSTRACT

This research investigates the influence of academic staff's resistance to change regarding technology readiness: The mediating role of technology self-efficacy. The comprehensive survey findings offer distinct perspectives on participants' viewpoints, showing a generally favourable disposition towards their readiness and competence in utilising technology within educational settings. The participants' exceptional acceptance is evident in the mean scores, particularly the significant average of 4.60, accompanied by a small level of variability (standard deviation = 1.38) concerning software readiness. Likewise, the mean score of 4.69 signifies the participants' level of assurance in embracing technological tools across multiple academic disciplines, suggesting a disposition towards incorporating technology. The aforementioned favourable viewpoints align with the principles of the technology self-efficacy theory, which underscores the significance of individuals' confidence in their aptitude to use technology effectively.

Moreover, the research sheds light on the impact of anxiety as a potential source of stress that affects individuals' inclination to engage with technology, specifically among individuals who have grown up in the digital age. The participants exhibited notable self-assurance and perceived proficiency in incorporating technology, emphasising satisfying psychological needs for motivation and optimal performance. This underscores the significance of self-determination theory and flow theory. Significantly, the mean ratings indicating substantial proficiency in technology utilisation, ranging from 4.4 to 4.6, reflect a positive and assured perception among academic faculty members. The present study acknowledges the variability in responses, as indicated by the standard deviations, which reflect individual variations in viewpoints and experiences within educational interventions.

The results presented here enhance our understanding of the intricate relationship between resistance to change among academic staff, readiness to adopt technology and self-perceived ability to effectively use technology. Including precise quantitative measures, such as means and standard deviations pertaining to various constructs, provides a robust foundation for comprehending the research outcomes. This study underscores the significance of tailored interventions and support systems within educational settings to address psychological factors and promote successful technology adoption.

Key terms: Covid-19, educational technology, organisational change, resistance to change, technology self-efficacy, technology readiness.

ACRONYMS AND ABBREVIATIONS

CAS	Change Attitude Scale
CRI	Change Readiness Inventory
DoI	Diffusion of Innovations
HEI	Higher education institution
NWU	North-West University
PEU	Perceived ease of use
PU	Perceived usefulness
RTC	Resistance to change
SDT	Self-determination theory
SPSS	Statistical Package for the Social Sciences
TAC	Technology acceptance model
TRF	Technology readiness framework
UTAUT	Unified Theory of Acceptance and Use of Technology
VUCA	Volatility, uncertainty, complexity and ambiguity

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CHAPTER 1: STUDY'S BACKGROUND AND OVERVIEW

1.1 INTRODUCTION

The Covid-19 pandemic changed the world as we know it significantly. Unfortunately, higher education institutions (HEI) were also not immune to the COVID-19 pandemic, which greatly affected the global education system (Oyedotun, 2020). Oyedotun (2020) further states that the challenges that academics faced were the availability of resources, practical training of students in a lab or field, connection to the internet for both academics and students and the lack of interactive presentations and cybersecurity. Human resistance to change is inevitable, considering the challenges experienced by academic staff.

The sudden changes due to the Covid-19 pandemic created several challenges within the academic environment for schools and higher education institutes. The exposure to technological conversion and adaptation differs for the various generation groups. According to Oyedotun (2020), the effect of the pandemic challenges to which academic staff were exposed were, for example, the availability of computers, internet access, training for the electronic platforms for conversion and presentation of classes, difficulty in intervening or having interactive sessions with students, and more. These hindrances influence the academic's self-efficacy; it might be stated as the primary cause for resistance to fast change within the educational sector (Williams-Buffonge, 2021). According to Smuts *et al.* (2017:755), previous research on technological changes within the academic environment is described as a "holistic and multidisciplinary collaboration". A study by Smuts *et al.* (2017:757) found that academics significantly resist adopting educational technology. Research conducted by Matrosova (2021) shows that changes and enhancements in a technological environment force higher education institutions (HEI) to adjust their teaching and learning methodology to a technical platform.

These changes resulted in resistance and impacted the well-being of staff worldwide. In separate articles, Khalil (2013) and Matrosova (2021) highlighted that resistance to change affects people's cognitive, emotional and behaviour. According to Diedericks *et al.* (2019:2), rapid changes necessitated those institutions to act swiftly to ensure a proactive commitment to support staff members through skills development and knowledge. Oreg (2003) identified six primary sources relating to resistance to change: (a) disinclination to lose control; (b) cognitive inflexibility; (c) lack of psychological flexibility; (d) bigotry to the period of change; low levels of motivation; and (e) old habits die hard. Managers of institutions need to be agile and not just say that they acknowledge

a world characterised by volatility, uncertainty, complexity and ambiguity (VUCA) (Worley & Jules, 2020).

Institutional support and the mechanisms for providing this need must be improved and enrich a stressful academic environment. Khalil (2013) states that various researchers have proposed that resistance to change should be addressed by a multidimensional approach towards change for which support from within the organisation is required. According to Thakur and Srivastava (2018), providing employers with adequate emotional and empathetic support will contribute to the readiness of the employee to change. The situation affects institutional income and has a ripple effect on academic staff and students.

The research conducted by Matrosova (2021:2) extensively highlights the impact of the Covid-19 pandemic and the abrupt closure of educational institutions worldwide. Higher Education Institutions (HEI) were forced to immediately suspend in-person classes and move to a complete online presentation mode of delivery. Lack of experience, inadequate technology and unstable internet connections are only some of the frustrations experienced by academic staff. According to Williams-Buffonge (2021), the effect is that these rapid changes and the challenges for academic staff directly impact their self-efficacy. Self-efficacy significantly affects a person's self-portrayal; it affects the way of thinking, behaviour, and interaction with others (Umit, 2018).

Academic staff members were forced to adopt technology in their pedagogy to ensure students received a quality education regardless of location. The challenge was for academics and students, especially regarding computer skills and access to data for internet connections. According to Williams-Buffonge (2021:18), the main challenge for academic staff is insufficient support, negatively affecting their self-efficacy.

Although self-efficacy is integral to adapting to technology-based education, experts in their fields can become anxious and doubtful, lowering their self-esteem in achieving results. Rojas (2020) stated that apart from the crucial role of self-efficacy, questions should be asked about why online teaching elicits a negative response. It could be that older educators are not as digitally savvy as their younger colleagues, so that generational factors may be at play. In order to enhance the delivery of quality education, resistance to using technology in teaching could be addressed through comprehensive workshops and training sessions focusing on the benefits of technology in education, hands-on practical experiences to build confidence and mentorship programmes to offer ongoing support.

However, research on resistance to adapting to a technology-driven education method shows that global competition and technological development somehow force the change to remain sustainable and competitive.

1.2 PROBLEM STATEMENT

Apart from the need for rapid pedagogical change brought about by the COVID-19 pandemic, ever-demanding technological change, such as artificial intelligence, also contributes to change within South African Higher Education Institutes. However, the global demand for technological advances is not restricted only to Higher Education Institutes (HEI); many organisations struggle with change management and resistance to technological change (Dunican, 2015:1). In discussing resistance to change, Watty *et al.* (2016:11) emphasise that resistance could be the result of a lack of knowledge and specific skills. According to Kent and Giles (2017:9), more experienced educators' self-efficacy is challenging to change; however, younger teachers are more adaptable and will be more likely to have used technology in their careers. Furthermore, the competence of employees is intertwined with their self-efficacy to encourage a positive outcome; in other words, self-efficacy is hypothesised as the mediator between resistance to change and career management (Turgut & Neuhaus, 2020:172).

Based on the literature, resistance to change can lead to low technology self-efficacy and a lack of readiness for using technology. Individuals resistant to change may need more confidence and skills to use technology. Resistance to change can result in a lack of interest in learning about new technology, leading to a lack of readiness to use it (Siegel *et al.* (2017:58). When people resist change, they may avoid learning about new technologies or be less motivated to try new things. This can result in a lack of knowledge and skills, further reducing their confidence and making them even less likely to adopt new technologies. The problem statement is: "Inadequate adoption of technology among academic staff persists due to the prevailing resistance to change within educational institutions. This resistance impedes the development of technology self-efficacy and readiness, posing a significant barrier to effective technology integration in teaching and learning environments". In addition, the mediator role of technology self-efficacy in the relationship between resistance to change (independent variable) and technological readiness (dependent variable) is also investigated.

1.3 RATIONALE AND SIGNIFICANCE OF STUDY

The study's rationale is to investigate the influence of resistance to change on technology readiness. In addition, the researcher will also examine the impact of technology self-efficacy as a mediator.

1.4 RESEARCH AIMS AND OBJECTIVES

The study investigates the influence of resistance to change on technology readiness.

The study's objectives are to:

- Explore the levels of resistance to change, technology self-efficacy and technology readiness of academic staff.
- Investigate whether there is a relationship between resistance to change, technology self-efficacy and technology readiness.
- Determine whether technology self-efficacy mediates the relationship between resistance to change and technology readiness.

1.5 RESEARCH QUESTIONS

Based on the objectives, the following research questions were formulated:

- What are the academic staff's resistance to change, technology self-efficacy and technology readiness levels?
- Is there a relationship between resistance to change and technology readiness?
- Does technology self-efficacy mediate the relationship between resistance to change and technology readiness?

1.6 HYPOTHESES

The hypotheses are based on each research objective:

Explore the levels of resistance to change, technology self-efficacy and technology readiness of academic staff.

- Hypotheses 1: There is no significant difference between levels of resistance to change among academic staff members.

Investigate whether there is a relationship between resistance to change, technology self-efficacy and technology readiness.

- Hypotheses 2: A relationship between resistance to change and technology readiness exists.

Determine whether technology self-efficacy mediates the relationship between resistance to change and technology readiness.

- Hypotheses 3: The mediating role of technology self-efficacy impacts the relationship between resistance to change and technology readiness.

1.7 PRELIMINARY LITERATURE REVIEW

The literature review focuses on three constructs, namely resistance to technology (independent variable), technology self-efficacy (mediating variable) and technology readiness (dependent variable). The conceptual framework for this study is depicted in Figure 1.1.

Conceptual Framework

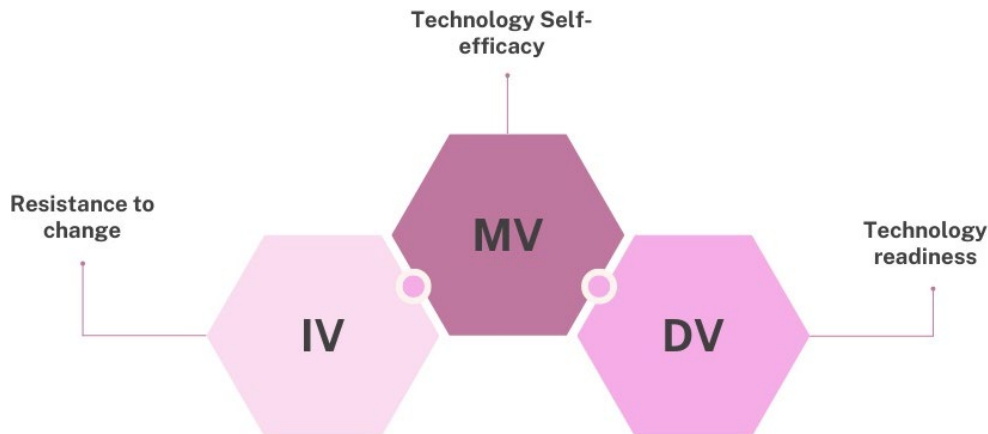


Figure 1.1: Conceptual framework

1.7.1 Resistance to Change

Research on converting higher education delivery methods to digitalisation has been ongoing since the 1980s (Watty *et al.*, 2016). While sustainability and competitive advantages drive the Perceived usefulness (PU)sh towards digitalisation, the preference for traditional teaching methods among academics persists due to rapid changes, characterised by resistance stemming from technological readiness and literacy needs (Watty *et al.*, 2016). Factors contributing to resistance include lack of knowledge, digital skills, and information about technology's advantages (Khalil, 2013). Matrosova (2021) attributes resistance to misaligned expectations, poor technological skills and fear of the unknown. Addressing resistance requires leadership direction, refraining from old habits, understanding fear and anxiety, and supporting academics (Matrosova, 2021). Rojas (2020) identifies efficacy, valence and principal support as crucial constructs impacting change resistance, while Oreg (2003) underscores reluctance rather than outright resistance, tied to emotional reactions and short-term focus. Dunican (2015) suggests emphasising ongoing benefits to counter resistance. Organisational support, trust, management relations, work engagement, and demographic factors also influence change acceptance (Moakofhi *et al.*, 2019; Ramos, 2017; Thakur & Srivastava, 2018;). Mittal and Alavi (2020) explore technological acceptance based on beliefs and self-enhancement, indicating that perceived self-enhancement could prompt the use of technology in teaching. Pan (2020) notes students' interest in technology-based learning, while Maican *et al.* (2019) highlight the influence of personality traits on technological change acceptance.

1.7.2 Technology Self-efficacy

Various scholars assert the significance of self-efficacy, which refers to a person's confidence in their abilities to perform a task (Akturk & Ozturk, 2019; Eller *et al.*, 2018; Kent & Giles, 2017). High self-efficacy positively impacts academics, fostering willingness to innovate teaching with technology (Bandura, 1977; Kent & Giles, 2017). Conversely, low self-efficacy negatively affects both academics and students' academic performance (Pan, 2020:3). Additionally, studies highlight the role of motivation, anxiety, and personality traits, indicating their influence on technology acceptance and use in academia (Deci & Ryan, 2000; Maican *et al.*, 2019; Nikou *et al.*, 2020). Maican *et al.* (2019) emphasise that work engagement mediated by personality traits significantly impacts the use of online technology, suggesting a vital role in adapting to technological changes in academia.

1.7.3 Technology Readiness

The concept of technology readiness refers to an individual's inclination to adopt and utilise technology to achieve personal or professional objectives (Jafari-Sadeghi *et al.*, 2021). In response to the sudden shift in pedagogy caused by the Covid-19 pandemic, higher institutions displayed varied levels of preparedness; those accustomed to online and blended learning managed the transition effectively, while others faced challenges due to the sudden shift (Bartolic *et al.*, 2022). To maintain student performance, academics primarily retained original course content and schedules, modifying assessment methods and grading criteria. However, inadequate training and support hindered successful content transition and instructor preparedness for online teaching (Kebritchi *et al.*, 2017). Enhancing readiness for technological transformation necessitates comprehensive training programmes, institutional backing, fostering a culture of technological innovation, flexible schedules, and self-satisfaction (Mishra *et al.*, 2020). Additionally, challenges such as resource constraints, interruptions in connectivity, and the need for innovative teaching approaches emerged amidst the shift to online teaching (Hofer *et al.*, 2021; Siegel *et al.*, 2017). Studies identified varied participant profiles, showing differences in self-efficacy, institutional support, and the impact of fear regarding autonomy and information quality on readiness for change (Hofer *et al.*, 2021; Siegel *et al.*, 2017).

1.8 DEFINITION OF KEY CONCEPTS

The key concepts used in this study are depicted in Table 1.1:

Table 1.1: Definition of key concepts

CONCEPT	DEFINITION
Covid	Covid-19 pandemic: SARS-CoV-2 infection is not just a respiratory infection or a vascular disease; the terminology is the concept of damage to multiple organs and multiple organ dysfunction (Robba et al., 2020:865)
Organisational change	Organisational change is the deliberate change within organisations relating to initiating innovative thinking, acting, and functioning (Del Val & Fuentes, 2003)
Resistance to change	Resistance to change is an inevitable force that affects managers and employees in the same Dent and Goldberg (1999). The phrase emphasises the uncooperative response from employees to embrace the change implemented by management; in other words, employees resist the unknown because the idea does not seem feasible from their perspective (Dent & Goldberg, 1999)
Educational technology	Education technology is a problem-solving approach that effectively integrates human and mechanical resources to facilitate learning by using tools, techniques, theories and methods from multiple knowledge areas such as design, development and evaluation (Luppicini, 2005)
Technology self-efficacy	Self-efficacy is a psychological concept about a person's confidence in their abilities and performance (Eller et al., 2018:39). According to Bandura (1977), self-efficacy significantly influences individuals' behavioural choices based on fear and a tendency to avoid threats and unknown situations believed to exceed their skills.
Technology readiness	Technology readiness involves integrating new technology into the existing profession to fulfil the user's objectives, representing the effective application of technology within the specified context (Kuo, 2013)

1.9 RESEARCH PHILOSOPHY

The research philosophy of this study is positivism. As a research paradigm, positivism involves objective and statistical analysis of the content in isolating the observer from the provided reality. The information gained from the framework of positivism is derived from empirical testing, emphasising the observation and the measurable phenomena. The positivism study focuses on identifying explanatory relations through quantitative research, consisting of numerical data and statistics (Rahman, 2020). This is further discussed in Chapter 3.

1.10 RESEARCH METHODS

This study was conducted within the quantitative paradigm. According to Rahman (2020), quantitative research uses the quantification of data in the collection and analysis.

1.11 RESEARCH DESIGN

The study uses a cross-sectional survey design, which, as stated by Allen (2017), refers to recording data or information for which the variables are not manipulated. The cross-sectional survey involves recording data, a snapshot of the research at a specific moment in time. In contrast, in the longitudinal design, obtaining research over a period of time allows for efficient collection of data and analysis at a certain point in time (Bijleveld *et al.*, 1998).

1.12 TARGET POPULATION

The target population for the study to investigate the relationship between academic staff's resistance to change and technology readiness consists of all academic staff at the North-West University (NWU). According to the North-West University (NWU) (2023), in 2022, 1,568 academics were employed on a permanent basis across all the faculties on all three university campuses.

1.13 SAMPLE METHOD AND SIZE

This study uses probability sampling. Probability sampling involves random selection, allowing the researcher to make strong statistical inferences about the whole group. In conducting a survey, the data collection method used in this study, the main goal is to get statistically significant results (Lakens, 2022). This means enough responses to infer conclusions with confidence. This study aimed to include 100 participants.

1.14 MEASURING INSTRUMENTS

This study used reliable and validated instruments to measure resistance to change, technology self-efficacy and technological readiness. The following instruments were used for this research:

- The Technology Readiness Instrument measures an individual's propensity to implement the use of new technology (Parasuraman & Colby, 2015).

- Change resistance measuring instrument to measure the resistance to change through four dimensions: routine seeking, emotional reaction, short-term thinking and cognitive rigidity (Oreg, 2003)
- Self-efficacy scale to determine an individual's belief in themselves and their ability to use technology (Kent & Giles, 2017).

These instruments are further discussed in Chapter 3.

1.15 RELIABILITY OF THE MEASURING INSTRUMENTS

The instruments used in the study were used due to already demonstrated reliability and validity. The resistance to change scale research indicated the validity and reliability of a valuable instrument for assessing resistance to change (Satopoulou *et al.*, 2020:303). The technology readiness index instrument was tested for validity and reliability in a study conducted by Syamfithriani *et al.* (2021); to ensure validity and reliability, the instrument was proven reliable. In the study by Yildirim and Ilhan (2010), the validity and reliability of the self-efficacy scale were determined and confirmed. According to Sürücü and Maslakçı (2020:2707), the reliability of a measuring scale refers to the instrument's stability in measurement and consistency. The reliability of the scales has been tested; therefore, the researcher will not need to complete an internal consistency test.

1.16 DATA ANALYSIS

To answer the research questions, the following statistical techniques were used. Descriptive statistics were used to measure the frequencies of the demographic variables and the levels of resistance to change, technology self-efficacy and technology readiness of academic staff. Pearson product-moment correlation measured the relationship between resistance to change, technology self-efficacy and technology readiness. Regression analysis was done to determine if technology self-efficacy mediated the relationship between resistance to change and technology readiness.

1.17 ETHICAL CONSIDERATIONS

The study's title was relevant to current changes within the academic environment of all Higher Education Institutions (HEI). The study did not harm or affect any participant or institution; the study did not expose any personal information of participants or influence participation. Participants were invited to participate in the research, and ethical clearance according to the

protocol of the North-West University (NWU) was obtained to include in the consent form. The prerogative of the participants was decisive in participation or decline.

Participants were informed of the background and purpose of the study by means of an informed consent form. The study was voluntary, and participants could withdraw from the study at any given time, even after the consent form had been completed. Data received after the interview will be kept for five years for audit purposes by the university if needed.

1.18 STRUCTURE OF DISSERTATION

Chapter 1 includes an introduction and background of the study exploring the factors associated with resistance to change in South African Higher Education Institutions (HEI).

Chapter 2 focuses on the literature study on the three constructs investigated in this study.

Chapter 3 presents on the research method and design.

Chapter 4 presents the results of the data analysis.

Chapter 5 discusses the results, highlights the recommendations based on the results and makes suggestions for further research.

1.19 CHAPTER SUMMARY

Chapter 1 introduced the research study, outlining its purpose, objectives, and significance within the broader academic context. It presents the background information, contextualising the research problem around the problem of resistance to change, technology self-efficacy and readiness to adopt technology, and justifying its relevance. The chapter delineates the research questions and objectives, providing a roadmap for the subsequent chapters. This research focuses on the impact of resistance to change on an individual's attitudes and actions towards technology adoption while also considering the potential mediating role of self-efficacy in this association.

The following chapter will provide a literature review focused on resistance to change, technology self-efficacy and technology readiness.

CHAPTER 2: LITERATURE REVIEW OF RESISTANCE TO CHANGE, TECHNOLOGY SELF-EFFICACY AND TECHNOLOGY READINESS

2.1 INTRODUCTION

For this research study, the literature review focuses on resistance to change, technology self-efficacy and technology readiness of academic staff from a South African university.

2.2 THEORETICAL-CONCEPTUAL FRAMEWORK OF RESISTANCE TO CHANGE

The definition of change refers to transitioning from one state to another (Schein (2010). Schein's framework highlights the multi-level nature of change, recognising that change can occur at different levels of analysis and be influenced by various factors (Schein, 2010). According to Oreg (2003), routine-seeking, emotional reactions, short-term thinking and cognitive rigidity influence resistance to change. Schein's definition of change emphasises the importance of discontinuity and interruption, which are necessary for change. Therefore, resistance to change refers to the unfavourable response from individuals or groups when an attempt is made to change an established status quo or practices.

According to Watty *et al.* (2016:2), research on converting higher education delivery methods to digitalisation has been done since 1980. The motivational factor is sustainability, and to remain competitive in the market, the opportunities provided through digitalisation are immense; however, the drastic and rapid changes to digitalisation have led to many academics still preferring the method of traditional teaching, characterised by teacher-centred delivery, often involving lectures, rote memorisation and minimal student engagement in active learning. The tendency of resistance to conversion to new pedagogical methods could be due to the need for more technological readiness and literacy. Watty *et al.* (2016:11) state that the resistance to the use of technology in teaching within academic institutions derives from the lack of knowledge and specific digital skills.

The lack of exposure and information about the advantages of using technology for teaching and learning supports the notion of resistance and self-efficacy amongst academics. Khalil (2013) indicates that research on technological change resistance has several causes: comfort and complacency in the current environment, insufficient information and communication, uncooperativeness, and lack of skills. Matrosova (2021) emphasises that resistance to change is

primarily due to a need for lack of alignment of the academic's expectations, poor technological skills and the fear of the unknown.

According to Matrosova (2021), resistance to change can be countered by leadership by providing direction, prioritising, and creating a purpose for the academic institution. The author emphasises the importance of refraining from old habits and understanding fear and anxiety to acknowledge that resistance significantly impacts pedagogy. Various studies have been conducted on how to change the thinking of resistance to change by encouraging and supporting academics through the process of change within the academic world (Matrosova, 2021). The findings of Rojas (2020) indicate that three constructs impacting resistance to change are the efficacy of academics changing pedagogy to online, valence where academics consider online teaching as a complement to on-campus teaching and principal support through the institution and the administration during change.

However, from the research conducted, conclusions indicate that academics are more reluctant rather than resistant to pedagogical change. The reference to reluctance rather than resistance is emphasised by Oreg (2003), which means the highest correlation in the findings was an emotional reaction and short-term focus. However, Dunican (2015) argues that because individuals are creatures of habit, countering resistance can be achieved by emphasising the benefits gained through change on an ongoing basis.

Therefore, most research indicates that an organisation's inability to address change in a supportive way impacts the process negatively. Thakur and Srivastava (2018) describe trust between the institution and employees as a positive empowerment approach to adjust to change, regardless of the expectations. According to Ramos (2017), management relations and work engagement are necessary and crucial mediators between resistance and willingness. Moakofhi *et al.* (2019:10) state that apart from institutional support, other factors, such as demographic characteristics, can also be influential in accepting change, especially with technology.

A study by Mittal and Alavi (2020) investigated the possibility of technological acceptance for learning as a learning mediation through mobile technology. Mittal and Alavi (2020) refer to technology acceptance illustrated in the Fishbein and Ajzen (1977) framework based strictly on behaviour; (Mittal & Alavi, 2020:185) concluded that the most critical factors about technology acceptance or change in their current situation are based on constructive belief and self-enhancement. The assumption derived from the study is that if change can be perceived as self-enhancing, the academic focus of the teachers' teaching and learning methods may more readily

include the use of mobile or technology devices. Pan (2020) emphasises that students are eager to explore technology-based and self-directed learning; this finding should be a crucial motivator for academic adjustment to technological teaching and learning. Apart from cognitive responses to the change to using technology for teaching and learning, Maican *et al.* (2019:129) highlight the impact of personality traits on acceptance of technological change.

The theoretical framework of resistance to change is defined as a set of concepts, assumptions, and principles explaining resistance to change in individuals and how to overcome resistance to change. Some of the concepts are described as the transformational leadership theory developed by James Macgregor in 1978, further developed by Burns in the 1980s (Seligman, 1980), Self-determination theory (SDT) (Deci & Ryan, 1980) and cognitive dissonance theory (Festinger, 1957).

2.2.1 Transformational Theory

Transformational theory characterises a leader's capacity to inspire and motivate followers with a shared vision of values to implement change successfully. Transformational leaders achieve this by comprehending the values and beliefs of their followers and can inspire and motivate followers to transcend their self-interest and achieve a common objective (Bakker *et al.*, 2022). Transformational leaders can provide individualised assistance and coaching to help individuals progress and develop their leadership skills. Idealised influence, inspirational motivation, intellectual stimulation and personalised consideration are the four essential components of transformational leadership.

Idealised influence is the capacity of a leader to serve as a role model for others and to earn their trust and reverence. Idealised leaders with a ten-point influence have a strong sense of purpose and a distinct vision of the future. Their communication skills inspire individuals to believe in the significance of shared objectives through their passion and zeal. Individuals are motivated to reach their maximum potential due to these leaders' ability to set an example of excellence and high performance (Chebon *et al.*, 2019).

Inspirational motivation is a leader's capacity to inspire and motivate followers toward a shared vision. These leaders can articulate a compelling vision that inspires and motivates individuals to accomplish a common objective. Inspirational motivators encompass the capacity to assist individuals by highlighting the contribution of the larger context to contribute to the success of the common goal. Individuals experience a sense of purpose and significance, enhancing motivation and accomplishing shared goals.

Intellectual stimulation entails provoking individuals to adopt a more creative and critical mode of thought. The intellectual stimulation leader encourages people to question their presuppositions, Pursue new perspectives and challenge the current status quo. Individuals are encouraged to investigate new ideas and initiatives in an environment that values curiosity and learning.

Individualised consideration involves providing individuals with support and coaching. The individualised leader provides individualised support and instruction to individuals based on their requirements and characteristics. This leader invests time in getting to know the individual more personally and provides feedback on the individual's strengths and weaknesses during a single mentoring and counselling session. Individual's motivation, ownership and creativity to achieve their objectives and attain higher performance levels are bolstered by support tailored to their specific needs.

2.2.2 Self-Determination Theory

Self-determination theory (SDT) explains human motivation and behaviour by emphasising individual psychological requirements for autonomy, competence, and affiliation. Individuals desire autonomy, competence, and relatedness, promoting motivation and well-being when satisfied. Individuals who perceive their environment as supportive of their psychological needs are highly motivated, have superior performance, and are generally satisfied with their well-being (Vansteenkiste *et al.*, 2012). Self-determination theory (SDT) is a highly accurate predictor of the outcomes of individual reactions in an environment where change is implemented and the extent to which they will resist the proposed change. According to Deci *et al.* (2017), Self-determination theory (SDT) provides an overarching perspective of job satisfaction, employee engagement and commitment. Individuals whose psychosocial requirements are met will perform better in their environment and be more committed to completing their tasks and achieving their goals. When implementing change in the workplace, it is of utmost importance to ascertain the needs of the individuals and to support and encourage change through coaching and mentoring.

2.2.3 Cognitive Dissonance Theory

The cognitive dissonance theory (CDT) proposes the psychological unease individuals experience when their beliefs, attitudes, and values conflict. The theory suggests that individuals who experience dissonance modify their beliefs, attitudes, and values to a more consistent intertwining.

Based on the proposed resistance to change questionnaire, the cognitive dissonance theory (CDT) appears most pertinent to this research study. Cognitive factors that influence the reaction are beliefs, opinions, knowledge of an aspect and behaviour in response to situations from the individual's perspective. Festinger's 1957 research on dissonance theory led him to the conclusion that psychological forces are the driving force behind behaviour. However, according to Tueanrat (2022:5), organisational dissonance is primarily based on decision justification, effort justification and compliance behaviour. In an article by Chelliah (2022), academics vehemently opposed changing their pedagogy to an online platform. The cognitive dissonance was mitigated through the need for immediate implementation. The challenges provided opportunities for adaptation but did not account for Festinger's dissonance perspective regarding the psychological impact of adapting to the use of technology. Chelliah (2022) provides an intriguing illustration of the impact of cognitive dissonance theories (CDT) when applied to the context of change. He concluded that there was resistance to change initially, but the impact of the pandemic necessitated the immediate implementation of the online teaching method. The cognitive dissonance in academics' experience has not been thoroughly investigated, but it can be assumed that the transition had a significant impact. By applying the cognitive dissonance theory (CDT) to the study of resistance to change, it may be possible to develop strategies for managing resistance to change.

2.3 CHANGE RESISTANCE MEASURING INSTRUMENTS AND DIMENSIONS

The most commonly used instruments identified to measure resistance to change are the resistance to change scale (RTC), change readiness inventory (CRI) and change attitude scale (CAS) (Armenakis & Harris, 2009). The resistance to change (RTC) measures resistance to change through four dimensions: routine seeking, emotional reaction, short-term thinking and cognitive rigidity (Oreg, 2003). The change readiness inventory (CRI) assesses readiness for change through three dimensions: task focus, people focus and change focus (Holt et al., 2007). The change attitude scale (CAS) has positive and negative dimensions (By, 2005). These dimensions collectively assess an individual's readiness and attitude towards embracing change in various aspects: cognitively, emotionally, and behaviourally.

According to Oreg (2003:680), the resistance to change (RTC) scale was designed to understand whether individuals resist or avoid making changes, devalue change and determine whether change is adverse across diverse contexts and types of change—the resistance to change (RTC) measures of behavioural, cognitive and affective factors. The resistance to change (RTC) focuses solely on understanding and assessing the tendency of Oreg (2003) resistance to change,

emphasising that resistance to change is a common phenomenon and a considerable obstacle to implementing change successfully. Oreg (2003) resistance to change (RTC) scale will be used to measure academic staff's resistance to change. A 6-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree), consisting of four factors and seventeen items, was used.

The items are listed as follows:

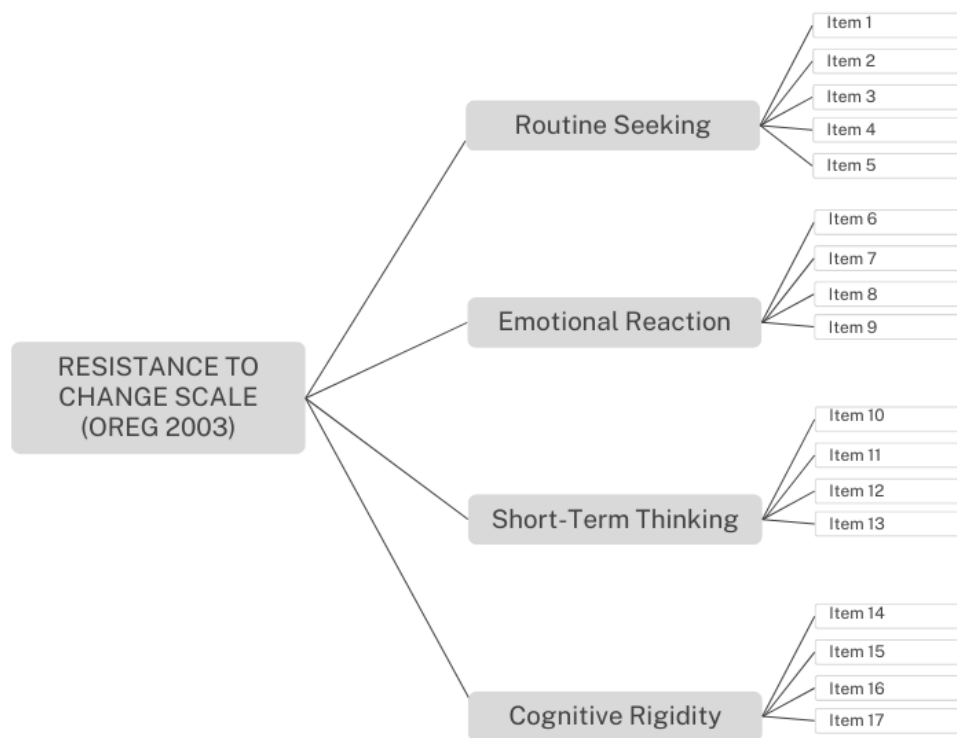


Figure 2.1: Resistance to change (RTC) scale

The dimensions of resistance to change (RTC) scale were described as follows by (Oreg, 2003):

- **Routine seeking:** This dimension refers to the tendency of individuals to prefer familiar routines and resist changes that disrupt those routines. On the scale, the item is known as “I prefer things to stay the way they are” and “I like familiar routines and habits”.
- **Emotional reaction:** The dimension refers to individuals’ emotional responses, such as anxiety, fear or anger. On the scale, the item is expressed as “I feel anxious about the change” and “I am upset about the change”.
- **Short-term thinking:** This dimension refers to the tendency of individuals to focus on the short-term impact and consequences of a change and resist change that may have long-term

benefits. On the scale, the items are “I am concerned about the immediate impact of the change” and “I worry about how the change will affect me in the short term”.

- **Cognitive rigidity:** This dimension refers to the inflexibility of individual thinking and resistance to new ideas. These items are known as “I find it hard to consider new ways of doing things” and “I prefer the tried and tested approach.”

Resistance to change (RTC) is a multifaceted phenomenon influenced by numerous variables. Certain personality traits, such as high neuroticism and low receptivity to experience, have been linked to high resistance levels (Oreg, 2003). Individuals are more resistant to change when they perceive a threat, such as a change in their job, status or autonomy (Armenakis & Harris, 2009). However, frequent and effective communication regarding change can contribute to a positive outcome, whereas a lack of information and misunderstandings have the opposite effect (Holt *et al.*, 2007). Lack of trust has the opposite effect on other factors, such as trust in leadership. Furthermore, past experience can impact a person’s acceptance of change; any negative correlation between change and experience will result in resistance to change (RTC) (Armenakis & Harris, 2009).

According to Schiavone (2014:45), resistance to technological change is attributed to culture, traditional practices and the high price of transformation. Resisting technological change is characterised by functional and psychological barriers (Rammile & Nel, 2012) – the functional barriers pertaining to the use of technology, the value barriers and the risk involved. The psychological barriers, in contrast, influence tradition and perception. Frequently, one considers the reasons why individuals resist change. Loss of status, dread of the unknown, mistrust, fear of failure and improper timing of implementation are a few of these reasons (Tanner, 2023).

Numerous factors contribute to the level of individuals’ resistance to change. One of the primary reasons individuals resist change is uncertainty (Scholkmann, 2021:13). To maintain a sense of control, individuals may resist the fear of an unfavourable outcome resulting from a change in circumstances. Those acclimating to their circumstances may also resist change because it disrupts their routines. They may only accept change if they perceive the change within a secure and supportive environment. Individuals may also be resistant to change if change leaders lack credibility. People may view the change as inappropriate or the individuals guiding the change as unreliable. In addition, individuals may resist change if they have endured too many transitions, resulting in change fatigue and reluctance to adapt. Individuals may oppose change if it contradicts their values or beliefs. For instance, if an employee’s moral principles conflict with a

new policy, they may oppose it. In addition, individuals may resist change if they do not comprehend its justification or anticipated consequences. People may oppose a change if they perceive it as unjust or biased. For instance, if a change disproportionately affects a subset of employees, those individuals may resist the change. Individuals and organisations must determine these causes of resistance to change. By acknowledging and addressing these concerns, it may be possible to increase acceptance of change and achieve positive outcomes. Recognising and addressing these concerns is crucial for enhancing the acceptance of change and its outcomes.

2.4 THEORETICAL-CONCEPTUAL FRAMEWORK OF TECHNOLOGY READINESS

The definition of the Technology Readiness Framework (TRF) theory explains the difference in the willingness and ability of individuals to adapt to new technology. The technology readiness framework (TRF) has been used in diverse settings, encompassing the assimilation and incorporation of technology within educational establishments. In the realm of pedagogical transformation, the TECHNOLOGY READINESS FRAMEWORK (TRF) can furnish significant insight into the preparedness of academic personnel to embrace novel technologies and instructional methodologies. Jafari-Sadeghi *et al.* (2021:101) define technology readiness as a person's propensity to embrace and use technology to accomplish personal or working goals. The framework comprises four constructs: optimism, innovativeness, discomfort and insecurity.

According to Bartolic *et al.* (2022:518), the response of higher institutions to the COVID-19 pandemic and the sudden change in the presentation of pedagogy resulted in some respondents having a more gradual experience than others. Institutions familiar with online, blended and integrated contact classes with digitalised materials responded adequately. However, in terms of the constraints of the pandemic, several actions had to be considered, such as the total restriction on gatherings, the autonomy of academics over their courses, and the diversity among students to advance a rational, standardised response. In reaction to the sudden conversion, most academics were confronted with course content and delivery methods limited to non-existing digital teaching resources (Bartolic *et al.*, 2022:521).

To preserve the institution's student academic performance, most academics favoured retaining the original course outcomes and presentation time; the only notable changes were to the assessment method and grading weightings. Kebritchi *et al.* (2017:11) conducted a systematic review of the shift in content development and instructors; it was determined that some transitions were not implemented adequately because of a lack of support and training. The lack of training

leads instructors to need more motivation in designing and delivering their online courses. Readiness for conversion can be fundamentally motivated through comprehensive training programmes and institutional support, fostering a culture of technological innovation and adaptation within educational settings—flexible schedules and self-satisfaction. According to Mishra *et al.* (2020:6), the forced online teaching mode meant that academics needed time to adapt to online teaching. Apart from the conversion, most of the challenges faced were the resources; both teachers and learners were faced with interruptions to electricity or poor connection. More meaningful interaction and innovative teaching are needed as academics cannot determine students' moods, making it difficult to change teaching patterns.

A study conducted by Hofer *et al.* (2021:5) indicated three participant profiles: the first profile indicated a low self-efficacy for teaching online and establishing a presence online; the second profile showed low levels in contrast to high levels of institute support; the third profile, the smallest of the survey, had high ratings in terms of readiness and high self-efficacy. In other words, the research indicates inconsistent profiles relating to high institutional support but a low competence-related belief, indicating that the internal and external support is partly independent. The study conducted by Siegel *et al.* (2017:58) found that widespread fear of losing autonomy, influence and the quality of information significantly influences the readiness for change.

The theoretical foundation of technology readiness is the extent to which individuals are prepared to adapt and implement new technology (Lai, 2017). Several studies have been conducted on information systems and technology adaptation, for which various frameworks have proposed different measures to explain technology readiness. The theories of technology readiness include several assessment instruments.

2.4.1 Technology Acceptance Model

According to Davis (1985), the technology acceptance model (TAC) focuses on two primary objectives: to understand the process of user acceptance and implementation of technology and to provide guidelines to curriculum designers and implementers prior to implementation. The technology acceptance model (TAC) suggests two distinct factors to drive technology readiness. These factors are Perceived Usefulness (PU) and Perceived Ease of Use (PEU) (Caffaro *et al.*, 2020). The two factors differ as perceived usefulness (PU) focuses on the extent of the enhancement of performance and benefits provided through technology, whereas perceived ease of use (PEU) is the difficulty of understanding the technology and its practical use in specific

circumstances. The individual's readiness to adapt to and embrace the use of technology can be determined by analysing these two factors.

2.4.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

Dwivedi *et al.* (2019:721) argue that the unified theory of acceptance and use of technology (UTAUT) model incorporates social influence, facilitating conditions and individual differences and that these elements provide essential information on individuals' perceptions of technology and the acceptance thereof. However, the model lacks focus on individual engagement, explaining the disposition of the individual to accept technology implementation. The four factors within the unified theory of acceptance and use of technology (UTAUT) model contributing to the determination of individuals' intention to use technology are performance expectancy, effort expectancy, social influence and facilitating conditions (Venkatesh *et al.*, 2003). Apart from these factors, Venkatesh *et al.* (2003) refer to other variables within the unified theory of acceptance and use of technology (UTAUT) that can influence the relation between the mentioned factors and technology readiness; these variables are gender, age, experience and voluntary use.

2.4.3 Diffusion of Innovations

Minishi-Majanja and Kiplang'at (2005:212) describe the theory of diffusion of innovations (DoI) by separating diffusion and innovation. Communication refers to diffusion, which involves informing others of innovative ideas. Innovation refers to a new or novel concept proposed by an individual. The diffusion of innovations (DoI) refers to the various individuals influencing innovation within a social system. The diffusion of innovations (DoI) comprises factors that impact the theory, such as adoption, trialability, observability, complexity, and compatibility. During technology use, the individual's perception of using technology changes – efficiency and effectiveness boost technology adoption (Bennett & Bennett, 2003; Rogers, 1995). Efficient training programmes should highlight instructional technology's advantages over traditional teaching tools. Trialability is the degree to which the individual can experiment with technology before adoption. According to Bennett and Bennett (2003) and Rogers (1995), the more individuals experience a novel technology, the simpler it becomes to embrace and adopt. Before implementation, new technology requires significant time and effort (Bennett & Bennett, 2003). Observability is the ease with which an individual can perceive, comprehend or articulate technology. Individuals have the capacity to acquire knowledge and assess tangible technological advancements. According to (Bennett & Bennett, 2003; Rogers, 1995), the likelihood of adoption is positively correlated with the level of observability.

The complexity of technology can intimidate instructors (Kilag *et al.*, 2023:39). Development and training programme designers are concerned because classroom instructional methods will not change unless individuals are acquainted with the technology. If the technology is intuitive, it can enhance instruction and learning. Many individuals mistakenly believe that comprehending technology requires a great deal of time and effort due to its apparent complexity. Young (2002) argues that the tenure-and-promotion system fails to recognise the time and effort individuals devote to mastering technologies.

Regarding compatibility, an individual would be more interested in a programme that emphasises the technology's interactive instructional properties than one that fails to address how the technology aligns with their philosophy. In many cases, implementing instructional technology will necessitate the abandonment of one set of educational values and beliefs and the adoption of a new set of values and beliefs concerning what constitutes effective pedagogy (Bennett & Bennett, 2003; Rogers, 1995).

These frameworks provide valuable insight into various aspects of technology diffusion and adoption. The technology acceptance model (TAC) focuses on factors at the individual level, whereas the unified theory of acceptance and use of technology (UTAUT) incorporates individual and contextual factors, and diffusion of innovations (DoI) emphasises the social dynamics of innovation diffusion. Understanding these frameworks can inform technology acceptance and successful implementation of research and practice.

2.5 TECHNOLOGY READINESS INSTRUMENTS AND DIMENSIONS

Parasuraman and Colby (2015:2-3) emphasise the importance of the technology readiness index (TRI) pertaining to the evolution of technology. The TRI determines an individual's predisposition to use new technology. The classification of the four constructs provides the perspective of individuals' perception of technology in the current environment.

The technology readiness index (TRI) of Parasuraman and Colby (2015) will be used in this study to measure technology readiness. The scale consists of four-factor dimensions and 16 items to measure academic staff's propensity to accept and use technology.

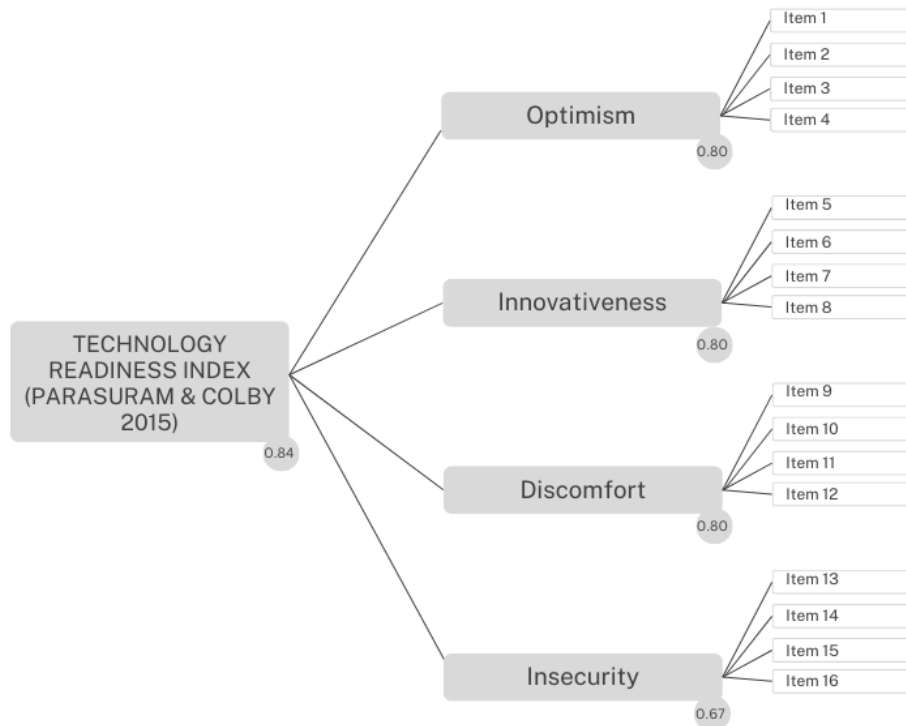


Figure 2.2: Technology Readiness Index

A 5-point Likert scale will be used, ranging from 1 (strongly disagree) to 5 (strongly agree). The dimensions of the technology readiness index (TRI) scale are described below.

Optimism refers to the individual's positive expectations and beliefs about technology. A high level of optimism perceives the idea of a positive contribution of technology to achieve an individual's goals and to improve their life (Parasuraman & Colby, 2015). Innovativeness is the willingness of an individual to experience new technology; a positive attitude towards experiencing new technologies is willing to take risks and experiment with technology (Parasuraman & Colby, 2015). Discomfort is a negative experience that causes an individual to have a degree of anxiety when using new technology. The discomfort in using new technology may cause difficulty and extreme fear of making mistakes (Parasuraman & Colby, 2015). Insecurity is the perception of individuals of control or concern about the consequences of using technology. Usually, these individuals are concerned with issues such as the security and privacy of information while using technology (Parasuraman & Colby, 2015).

For the purpose of this research study, the technology acceptance model (TAC) (Oreg, 2003) will be used to determine the respondent's readiness for change. The technology acceptance model (TAC) has gained popularity based on its efficacy in providing an understanding of the relations

between humans and technology (Durodolu, 2016). This interpretation is made through perceived usefulness (PU) and perceived ease of use (PEU). Perceived usefulness (PU) can be defined as the intention of users, training for the user, computer literacy and the system's quality. The perceived ease of use (PEU) determines the user's self-efficacy, perception of control, user-friendliness, self-efficacy in using the internet and online libraries, anxiety when using a computer, the information received, the individual's behaviour and the intention of the individual (Durodolu, 2016). The analysis of these factors can assist in developing strategies to ensure the successful implementation, adaptation, and use of technology.

2.6 THEORETICAL-CONCEPTUAL FRAMEWORK OF TECHNOLOGY SELF-EFFICACY

According to (Eller *et al.*, 2018:39), self-efficacy is a person's psychological concept of confidence in their abilities to perform a task. Kent and Giles (2017) state that self-efficacy is a significant factor in the understanding and successful integration of technology in teaching. Akturk and Ozturk (2019) define self-efficacy as an individual's capability to assess and effectively organise tasks or processes for successful completion. Self-efficacy certainty is the individual's perception of their belief about their thoughts, feelings, behaviour and motivation in achieving the outcome. The outcome of positive belief leads to a person's success, relating to high self-efficacy (Akturk & Ozturk, 2019). According to Alberta Bandura's social cognitive theory, self-efficacy is an individual's intellectual capacity to believe they can accomplish at task (Bandura, 1977; Kent & Giles, 2017). Academics with high self-efficacy are more willing to change to support a positive learning experience and innovative teaching through technology for their students.

Conversely, the downside of lack of self-efficacy in most cases is that it negatively impacts both the academic and the student. Studies have confirmed that the beliefs of the academic in their self-efficacy have a direct impact on the student's academic performance. Pan (2020) indicates that students' self-efficacy also impacts their beliefs in technological use and the ability to perform in an online environment. Research on enhancing efficacy includes the context which supports higher levels of efficacy and generally higher levels of execution. The study highlights the impact on teacher behaviour of instructional planning, preparing the academic for technology use, and providing the correct tools (Kent & Giles, 2017). The research conducted by (Pan, 2020:4) about learning motivation as a mediator refers to the self-determination theory (SDT), which stresses that support within the environment contributes to basic psychological needs. The support encourages motivation to create an environment of determination and personal cognitive intention (Deci & Ryan, 2000).

Although motivation plays a significant role in preventing resistance to technological change, another culprit is anxiety. Maican *et al.* (2019:114) refer to anxiety as a stressor impacting the willingness to use technology, especially among digital natives. The term “digital native” refers to individuals who have grown up in the digital era, having been exposed to technology from an early age and are generally more adept at using digital devices and navigating digital environments. On the other hand, “digital immigrants” are individuals who have adapted to digital technology later in life, often after its widespread introduction, and might find it more challenging to fully embrace or use technology compared to those who grew up with it (Nikou *et al.*, 2020:2). Studies have found that the user’s age plays a significant part in their self-confidence and have confirmed that anxiety is more related to age than self-efficacy. However, in the survey by Maican *et al.* (2019:128), the results based on the Unified theory of acceptance and use of technology (UTAUT) dimension indicate that personality traits have a more significant effect on the use of technology than previous research on anxiety. According to Maican *et al.* (2019:128), personality traits impact the working environment and enhance personal lives, showing an increased interest in online technology. Maican *et al.* (2019:128) most relevant finding was that work engagement could mediate the relationship between a person’s personality traits and the use of online pedagogy in academia and personal achievement. Combining technology, integrated work engagement, realisation, emotional stability, sincerity, extraversion, and confidence enhances success in coping with new technology (Maican *et al.*, 2019:129).

Technology self-efficacy is the individual’s perception of their confidence in using technology. An individual with a higher technology self-efficacy is less likely to be concerned about the implementation and use of technology.

In technological self-efficacy research, several theoretical frameworks have been cited rather frequently. These theories provide a framework for analysing the growth and influence of individuals’ self-perceived talents and confidence in utilising technology, and they do so by focusing on the relationship between the two. A few of the most influential theoretical underpinnings are as follows:

2.6.1 Self-Determination Theory

According to Sørenbø *et al.* (2009), the three main aspects of Self-determination theory (SDT) are autonomy, competence, and relatedness.

- **Autonomy:** Self-determination pertains to the inclination to initiate and regulate one’s actions independently. Fulfilling these three needs is crucial for individual growth and welfare,

irrespective of cultural differences. Although the behaviours that lead to satisfying these needs may vary among individuals and cultures, the fundamental importance of their fulfilment remains unchanged (Deci & Ryan, 2000). Autonomy makes people more willing and persistent.

- Competence is the need for people to feel adequate and competent in their interactions with the environment (Deci & Ryan, 2000). It entails seeking out opportunities to develop and master abilities and experiencing a sense of growth and accomplishment. When individuals believe they are competent, they are confident in their ability to overcome obstacles and achieve their goals. Competence fosters a sense of mastery and self-efficacy, thereby encouraging intrinsic motivation. In addition, it fosters a sense of self-assurance and belief in one's abilities, resulting in increased commitment and persistence.
- Relatedness pertains to the inherent inclination of individuals to establish and maintain social connections with others (Deci & Ryan, 2000). Relatedness is the need for social connection and belonging. It requires empathy, strong relationships and a feeling of support. Social connection and collaboration are more likely to occur when people feel connected. Relatedness promotes intrinsic motivation by satisfying the fundamental human need for social connection and fostering positive emotions, such as happiness and concern.

2.6.2 Flow Theory

Flow theory, in relation to motivation and self-efficacy, denotes a mental state of complete immersion and optimal engagement in a task or activity. Individuals need to maintain a flow state through challenges (Csikszentmihalyi, 1990; Hendricks, 2016). Individuals perform best and enjoy themselves when their skill level matches the task's challenge. When difficulty exceeds an individual's skill level, it tends to induce apprehension. In contrast, if the skill level exceeds the difficulty, it frequently results in a lack of interest or stagnation. Maintaining an optimal equilibrium between the difficulty level and skill is essential for fostering the flow experience. As per Maslow's hierarchy, the need of individuals is fulfilled when their level of skills matches their challenges of change (McLeod, 2007).

For this research study, the flow theory is applicable. Based on the investigation of self-efficacy as a mediator, the results might indicate the relevance of the flow theory. Based on the research conducted by (Tandon, 2017:87), it is assumed that there could be a relationship between the self-efficacy theory of Bandura (1977) and the flow theory of Csikszentmihalyi (1990). According to the data analysed by (Tandon, 2017:98), there is a correlation between self-efficacy and flow;

as per definition, self-efficacy correlates positively with the experience of flow, as higher levels of self-efficacy often contribute to an increased likelihood of achieving a state of flow during an activity or task.

2.7 TECHNOLOGY SELF-EFFICACY MEASURING INSTRUMENTS AND DIMENSIONS

Kent and Giles (2017) postulate that self-efficacy is a significant factor in the successful execution of technology use. Integrating technology in teaching has been assumed to directly relate to the individual's belief in their ability to implement and use technology in their pedagogy. Measuring technology self-efficacy is a crucial indicator of an individual's beliefs in implementing instructional technology. The technology self-efficacy scale used by Kent and Giles (2017) will be applied to measure the technology self-efficacy of North-West University (NWU) academic staff members. The scale consists of 14 items. A 6-point Likert scale ranging from 1 (not at all) to 6 (a great deal) will be used.

The dimensions of the technology self-efficacy scale are described as follows:

- The Computer Self-Efficacy Scale is one of the earliest and most extensively used tools to measure self-efficacy attitudes connected to the use of computers. It was developed by Compeau and Higgins (1995). It has been shown to have a high level of reliability and validity across a variety of studies and is used to evaluate people's levels of self-assurance in their ability to complete a variety of computer-related tasks.
- Internet self-efficacy is an individual's confidence in finding information, communicating and engaging in online activities. The Internet Self-Efficacy Scale, developed by Eastin and LaRose (2000), focuses on individuals' self-efficacy beliefs about using the internet and participating in online activities. It measures confidence in performing tasks such as seeking information, using online communication tools and navigating online platforms.
- The Technology Proficiency Self-Assessment Scale, developed by Ropp (1999), is a self-assessment instrument that measures an individual's perception of proficiency in numerous technology-related skills. It encompasses a variety of topics, such as computer use, software applications and internet use. Mobile technology self-efficacy describes the individual's confidence in using tablets and smartphones to perform tasks.

Each dimension provides insight into the individual's comfort level with using the various types of technology with ease and assists with identifying areas where support is required (Kent & Giles,

2017). By considering these dimensions and the corresponding self-assessment scores, managers and other staff can identify specific areas where individuals may require additional assistance, training or resources. Interventions can be identified to assist in an individual's specific technology-related requirements and improve their overall technology proficiency and comfort.

According to Slutsky (2016), other factors that influence educators' self-efficacy can be work-related. Some of the work-related factors were identified as (a) perception, (b) knowledge of access to technology, (c) area of focus, (d) perceived barriers, and (e) training for the use of technology. Personal factors also impact self-efficacy, such as (a) personality traits, (b) access to technology from private residences, (c) assumptions and attitudes pertaining to technology, and (d) fear (Slutsky, 2016). A person's level of self-assurance in their ability to carry out particular technical activities, such as operating software, diagnosing and fixing problems, or effectively using digital gadgets, is evaluated according to the technical skills dimension. Confidence in one's abilities is the focus of the self-confidence dimension, which investigates people's beliefs regarding their general capacity to use technology successfully. It includes how they feel about their proficiency, flexibility, and problem-solving ability, all tied to technology. Individuals' impressions of the ease and convenience associated with utilising technology are investigated via the lens of the perceived ease of use (PEU) dimension. Their self-assurance is evaluated based on how quickly they can grasp new technology tools and platforms and how well they can navigate them.

Task-specific efficacy is a dimension that focuses on an individual's self-assessed competence in accomplishing certain technology-related activities, such as data analysis, programming or online communication. This can be a significant factor in determining an individual's overall level of technology-related efficacy. Individuals' perceptions about the possible results or benefits of employing technology are evaluated along this dimension, referred to as outcome expectations. It determines how confident they are in their ability to achieve the desired results or reach their goals through the application of technology (Ulfert-Blank & Schmidt, 2022).

The learning and growth mentality is a dimension that examines an individual's attitudes toward learning new technology-related abilities and developing new ones over time. It investigates their confidence in their potential to acquire new things and develop their technical skills continuously.

Because of the multifaceted character of technological self-efficacy, it is necessary to employ specific measuring tools to capture the nuances and breadth of individuals' technological confidence. These instruments provide important data for researchers, educators, and

organisations looking to improve technology integration, training programmes or intervention strategies.

Another study by Harrell and Bynum (2018) refers to internal and external factors limiting technology integration. External factors include infrastructure and location, access to technological devices and lack of sufficient support after training to use technology. The internal factors noted were low self-efficacy, educator perception, and paradigm shifts from old standards.

External factors are circumstances and elements that individuals and organisations cannot control. The focus is on two crucial external factors: infrastructure and location, access to technological devices and a lack of adequate support following technology training. The availability and quality of infrastructure, such as dependable internet connectivity and electricity supply, play an essential role in integrating technology. In some regions or locations, the infrastructure may be limited or inadequate, making it difficult to access and effectively employ technology. Internet connections that are slow or unreliable can hinder the seamless operation of online platforms and tools, impeding efforts to integrate technology. Similarly, geographical regions with inconsistent or inadequate power supply may struggle to use technology consistently and effectively (Adarkwah, 2021).

Technology integration requires the availability and accessibility of technological devices, such as computers, laptops, iPads and smartphones. However, not all individuals may have access to these devices. Socioeconomic factors, location or educational resources can influence access disparities. Individuals with limited access to devices may be unable to engage with technology and reap its benefits ultimately. Individuals may encounter obstacles when attempting to participate in online learning, gain access to digital resources, or utilise technology for work (Oz, 2014).

Inadequate support following training in the use of technology can also be a significant external limitation. Frequently, training programmes equip individuals with the necessary skills and knowledge to effectively integrate technology. However, if individuals do not receive adequate ongoing support or follow-up assistance, it may be difficult to implement their workplace training effectively. Individuals' confidence, progress, and the successful integration of technology into their work or learning environments can be hampered by insufficient support (Liu *et al.*, 2019).

Infrastructure and connectivity can be enhanced to address these external limitations, particularly in underserved regions. These external limitations can be mitigated by expanding internet access, investing in a reliable electricity supply, and developing a robust technological infrastructure. In

addition, providing access to technological devices through initiatives such as public computer centres and loan programmes can help bridge the digital divide and promote equitable technology integration. Furthermore, organisations and educational institutions should ensure that individuals have access to ongoing support and resources following technology training, promoting an environment that facilitates the effective use of technology (Tiwasing *et al.*, 2022).

By addressing these external factors and fostering equitable access to technology and ongoing support, organisations and institutions can overcome obstacles and facilitate the successful integration of technology into various domains, resulting in improved learning, productivity and innovation. It is crucial to conduct a technological self-efficacy assessment to understand individuals' attitudes and levels of confidence regarding their ability to use technology effectively. By assessing a person's technical self-efficacy using one of the numerous instruments and dimensions developed, it is possible to gain valuable insights into their technological competence and readiness to engage with technology. This is a helpful method for acquiring valuable information.

It is essential to remember that measuring technological self-efficacy is dynamic, with new tools and dimensions continuously emerging due to technological progress. Researchers and practitioners should prioritise keeping up with developments in this field to ensure that their technology self-efficacy assessments are valid and applicable.

2.8 INFLUENCE BETWEEN RESISTANCE TO CHANGE AND TECHNOLOGY READINESS

In the influence of resistance to change (RTC) and technology readiness, as researched by Thakur and Srivastava (2018), an individual confronted with change has two options: either resisting or accepting the change. Some of the findings to determine the influence of resistance to change (RTC) and technology readiness were trust; individuals are eager to change if they experience trust, which will contribute to their confidence perceived through the goodwill of their management – however, any change in the management or organisation results in reluctance due to fear of the unknown. When confronted with change, people react unpredictably, and technological changes can be challenging. Individuals experience and adapt to acceptance if they are at ease with the change and dedicated to achieving its goals. Emotional outbursts and reactions typically impede the process of enacting change and accepting technological implementation. (Thakur & Srivastava, 2018).

To successfully adopt technical improvements and reduce employee opposition within a company, such organisations must understand the relationship between these two factors.

Resistance to change (RTC), often fuelled by fear and uncertainty, can limit a company's readiness to adopt new technologies. People anxious about the results or implications of technological developments may be less likely to accept new technologies and less likely to develop the skills and mentality necessary for being technologically ready (Thakur & Srivastava, 2018).

Individuals who resist change risk losing their motivation to adjust to new technologies, and improving their level of technological preparedness will decrease if they view the change as disruptive or unneeded. Individuals who resist change are more likely to disengage from the change process and have lower levels of participation or involvement in obtaining the skills and information required for technology readiness. Individuals with greater degrees of technological preparedness are more likely to have a positive mentality and be proactive in dealing with changes brought about by technological advancements. They may see change as an opportunity for professional development, career progress and enhanced workflows. They may, thus, have less resistance to change. Adaptability and learning orientation are essential components of technology readiness, as this refers to the willingness and the ability to adopt new technologies. People who are more prepared technologically tend to have a greater capacity to learn and adapt, which makes them more willing to accept change and less resistant to it. Confidence in employing technology and self-efficacy in navigating and using new tools and platforms are often considered to go hand in hand with technology readiness. People with higher levels of confidence and self-efficacy are more likely to approach technological developments with a positive view, reducing people's resistance to the changes (Thakur & Srivastava, 2018).

It is critical to reduce levels of resistance while simultaneously increasing technological preparedness. Resistance to technological change can be mitigated, and technology readiness can be improved by open and transparent communication regarding the rationale, benefits, and impact of technological developments. It is possible to cultivate a sense of ownership and participation in individuals by asking for their input and involving them in decision-making. Improving an individual's preparedness for technological advances can be accomplished by offering extensive training programmes and continuous support while implementing technological improvements. Resistance can be reduced, and readiness can be fostered by offering opportunities for skill development, resolving concerns and supplying resources. Increasing technological preparedness and decreasing resistance to change (RTC) can be accomplished by cultivating a company culture that places a premium on learning, adaptability and creativity. A

decisive leadership that actively promotes and supports technology improvements has the potential to affect both the attitudes and readiness of individuals (Thakur & Srivastava, 2018).

The influence of readiness for technological advancement and reluctance to change is intricately connected (Thakur & Srivastava, 2018). Increased technological readiness levels can help reduce resistance to change (RTC), while increased resistance can make technological readiness more difficult. Organisations can increase technology readiness and minimise resistance by addressing concerns, offering training and assistance and cultivating a conducive company culture.

According to the research by Hong (2022), the rapid changes imposed by the COVID-19 pandemic and enforcing the adoption of online learning were welcomed by some individuals, while others reflected dissatisfaction with technology. Some individuals welcomed the flexibility provided through online learning, which led to a more efficient approach to managing time and schedules. There was some comfort in preparing and attending online learning from home. On the other hand, some individuals were uncomfortable with the shift to online learning based on the challenges of the various platforms, technical issues and the loss of interaction with individuals in the face-to-face environment.

Bandura *et al.* (1999) emphasised that self-efficacy is an individual's belief in their ability to execute tasks successfully. Individuals lacking the self-confidence to accept the challenge and experiment with new ideas found the change extremely challenging. A negative experience can result in many individual stressful reactions and negatively impact achieving goals. Hong (2022) found discrepancies in the literature on self-efficacy using technology; some outcomes indicated that self-efficacy impacts technology use positively, whereas others suggested that it did not impact adapting to an online learning platform. Individuals who are able to use online learning platforms are more willing to engage and are confident in overcoming technology challenges. These individuals usually have higher interaction, engagement and optimisation through technology. The use of technology can be very complex for specific individuals; this can be based on many reasons, such as a previous negative experience, and has a significant impact on self-efficacy.

The study by Zaidi (2022) noted that of all the research conducted on self-efficacy, none of the studies focused on factors such as age, gender, work capacity and technical skill or the impact these factors could have on academics' commitment to implementing online learning. However, the study found that academic commitment and increased self-efficacy positively impacted implementation change outcomes.

The relationship between change resistance and technological readiness is substantial and interdependent (Yadav *et al.*, 2022:12). Individuals' resistance to change (RTC) can hinder their readiness to implement and use new technologies effectively, whereas technology readiness can mitigate resistance and facilitate a successful adoption. Individuals' adaptability to technological changes can be hindered by resistance to change (RTC) fuelled by dread, uncertainty or a lack of motivation. It may result in disengagement, decreased participation, and a negative attitude toward technology adoption. In contrast, technology readiness, characterised by a positive outlook, adaptability and confidence in using technology, can minimise resistance and facilitate a smooth transition to new technologies.

According to Self and Schraeder (2009), organisations can use various strategies to cultivate technological readiness and reduce resistance to change (RTC). Open and honest communication, participation of individuals in decision-making processes, and comprehensive training and ongoing support are indispensable. Creating an organisational culture that values innovation, learning, and adaptability can also increase technological readiness and decrease resistance (Leso *et al.*, 2023).

By comprehending the connection between resistance to change (RTC) and technological preparedness, organisations can develop targeted interventions and strategies to promote technology adoption. They can resolve concerns, instil confidence, and provide the necessary resources and support to increase individuals' technology readiness. This, in turn, can result in easier transitions, greater acceptance of technological change, and enhanced technology use for organisational success. Recognising that the influence of resistance to change (RTC) and technology readiness is dynamic and context-dependent, organisations should continuously assess and modify their approaches to accommodate the ever-changing technological landscape and individual requirements. By doing so, they can cultivate an environment conducive to technology readiness and a positive attitude toward change, ultimately resulting in the successful implementation and use of technology.

2.9 MEDIATOR ROLE OF TECHNOLOGY SELF-EFFICACY

In the study by Pan and Chen (2021), the results indicated an indirect relation between academic lecturers' behavioural support and students' self-directed language learning, which is influenced by their level of technological self-efficacy. Pan and Chen (2021) further emphasise that the perception of Ertmer (2005) pertaining to the behavioural support of lecturers directly impacts the interpretation of student observation of technology facilitation. Many students embraced the

encounters with technology through their lecturers and peers, and the increase in students' confidence was evident as their self-efficacy increased (Lai, 2015). The mediating role of technology self-efficacy is evident in the study from Pan and Chen (2021), which emphasises that the academic lecturer and their self-efficacy in the use and adaptation to technology are advantageous to students' emotional support and behaviour towards technology endeavours. Engaging in using technology and effectively implementing the adaptation to technology impacts students' self-efficacy towards technology use (Pan & Chen, 2021). The research from Williams-Buffonge (2021), citing VanderNoor (2014), emphasises the importance of academic self-efficacy and its pivotal role in deciding on technology integration during the implementation of online pedagogy. The study found that academics' self-efficacy has direct implications for incorporating technology in academic and instructional practice. The self-efficacy of academics influences the collective beliefs of the students pertaining to their experience within the classroom and the academics' ability to portray a positive belief in the advantages of technology implementation and usage.

In other words, self-efficacy shapes the minds of academics in terms of their beliefs and ideas about using technology. The acceptance and belief in implementing technology in their academic environment impact the outcomes of the instructional delivery of pedagogy (Williams-Buffonge, 2021).

In conclusion, individuals' decisions influence their perceived sense of efficacy, which directly impacts the positive or negative perception of their students and colleagues.

2.10 CHAPTER SUMMARY

The concepts of resistance to technology, technology self-efficacy, and readiness all relate to the attitude and behaviour of an individual toward technology (Pan, 2020). An individual's attitude and behaviour regarding technological advancements are at the core of resistance to technology, technology self-efficacy, and preparedness (Heo, 2009).

Individuals may display reluctance or opposition when presented with the opportunity to implement or use new technologies. This occurrence is known as "resistance to technology". It can be attributed to several factors, such as a lack of familiarity with technology, a dread of the unknown, and worries about the impact on job security or skills. Resistance to technology may manifest as avoidance, scepticism or even explicit opposition to the deployment or use of technology. Organisations must comprehend and overcome resistance to technology if they wish

to facilitate the adoption of technology more efficiently and limit the adverse effects on productivity and innovation.

These concepts are interrelated and mutually influential. Individuals resistant to technological change may be less likely to acquire the necessary knowledge, skills and self-assurance to utilise technology effectively. This may hinder their technological self-efficacy and preparedness. Conversely, those who feel more empowered and prepared to embrace and adapt to technological developments may be less resistant to technology if they have greater levels of self-efficacy and readiness regarding technology.

The following chapter will provide insight into the research design and method used in the study to investigate resistance to change, technology self-efficacy and technology readiness.

CHAPTER 3: RESEARCH METHOD AND DESIGN

3.1 INTRODUCTION

Education has undergone substantial transformation due to the profound impact of technological advancements. Technology integration has become crucial in enhancing higher education institutions' pedagogical and educational processes. The main objective of this study is to investigate the impact of resistance to change (RTC) among academic staff members, specifically exploring the mediating role of self-efficacy. The aim is to enhance our comprehension of the factors contributing to technological readiness within the academic staff community.

This chapter presents a comprehensive overview of the study's research design and methodology to examine the associations between resistance to change (RTC), technology readiness and self-efficacy among academic staff members. The research design provides a framework for gathering, analysing and interpreting data to illuminate the complex dynamics associated with integrating technology in educational settings.

3.2 RESEARCH PHILOSOPHY

The research philosophy of this study is positivism. Positivism in research separates the person and the reality to analyse the content statistically and objectively; the knowledge obtained is from empirical testing. Positivism studies focus on identifying explanatory relations through a quantitative approach; within positivism, the principles include experimentation, the replication of findings and generalisation (Rahman, 2020). Therefore, the study used a quantitative research approach to investigate the influence of resistance to change (RTC) and the technology readiness of academics at a South African Higher Education Institute.

3.3 RESEARCH METHOD

This study was conducted within the quantitative paradigm. According to Rahman (2020), quantitative research perceives the quantification of data in the collection and analysis thereof. The quantitative method uses deductive logic by interpreting empirical components presented numerically as a rate or frequency to associate with one another through statistical techniques and systematic measurement. According to Rahman (2020), quantitative studies are based on the positivist approach.

3.4 RESEARCH DESIGN

The study used a cross-sectional survey design, which, as stated, involves collecting data from a diverse population at a single point in time to analyse and compare the prevalence and influence of the variables. In this research design, the variables of interest were observed and measured naturally, without manipulation or researcher intervention.

The cross-sectional survey design permits researchers to simultaneously capture data from various individuals or groups from a sample of the population. It provides a comprehensive view of the characteristics of the population and allows for the examination of the influence and patterns among variables of interest. Researchers can analyse and compare the responses or characteristics of different individuals or groups within the sample population by collecting data simultaneously (Mohajan, 2020).

Empirical researchers in numerous disciplines, including the social sciences, market research, public health and education, frequently use cross-sectional surveys. They provide valuable insights into the present condition of the studied population, identify trends and inform decision-making processes. However, it is essential to note that cross-sectional surveys have limitations (Ahmed *et al.*, 2022). Because data is collected at a single point in time, it does not reflect changes or developments over time. In addition, the design precludes the establishment of causal relations between variables. To circumvent these constraints, researchers can combine cross-sectional data with other research designs or conduct longitudinal studies that capture data at multiple time points.

3.5 BASIC ASSUMPTIONS, DELIMITATION AND LIMITATIONS

The research is based on fundamental premises without which a study cannot be completed. The basic assumption in this study was that the participants could read and understand the questions of the measuring instrument and would answer the questions honestly. The researcher developed clearly stated, structured and validated questions. The research provided clear instructions for the completion of the survey.

The delimitation of the study was that all academic staff from the eight faculties across the three university campuses were included in the sample for participation in the study. The limitation of the study was that the study was only conducted within the quantitative paradigm using a cross-sectional survey. The reliability of the data depended on the respondents' objectivity and honesty. The survey did not capture the respondents' emotions, feelings, behaviour and attitudes.

3.6 TARGET POPULATION

The target population for the study to investigate the influence of academic staff's resistance to change (RTC) and technology readiness consisted of all academic staff with the North-West University (NWU). The sample frame was all academic staff members from the Faculty of Education, Faculty of Economic and Management Science, Faculty of Engineering, Faculty of Health Sciences, Faculty of Humanities, Faculty of Law, Faculty of Natural and Agricultural Sciences, and Faculty of Theology across all three campuses of the North-West University (NWU). The approximate size of the population was 1568 (North-West University (NWU), 2023).

3.7 SAMPLE METHOD AND SIZE

The study used probability sampling, which involves selecting participants from the target population in a way that gives each member of the population a known and non-zero chance of being chosen (Rahman, 2023). Probability sampling is used to ensure that the sample obtained is representative of the population, allowing researchers to make unbiased inferences and generalisations about the population based on the characteristics observed in the sample. Probability sampling aims to minimise selection bias and increase the reliability and validity of the research findings.

Random sampling is a method used in statistics and research to select a sample from a larger population in such a way that each individual or element in the population has an equal chance of being chosen (Rahman, 2023). The process involves using a random mechanism, such as a random number generator or a lottery method, to select elements without any bias or specific pattern. This ensures that the selection process is entirely by chance, minimising the risk of favouring certain characteristics or subsets within the population. Random sampling aims to create a representative sample that mirrors the diversity and characteristics of the entire population, allowing for more accurate generalisations and conclusions based on the sample data.

The primary objective of this sampling strategy was to determine the appropriate sample size to effectively capture the comprehensive range of perspectives and characteristics exhibited by the academic staff at North-West University (NWU). This will provide comprehensive knowledge of the various elements contributing to their resistance to change (RTC) and their preparedness for adopting new technologies.

3.8 MEASURING INSTRUMENTS

This study used reliable and validated instruments to measure resistance to change (RTC), technology self-efficacy and technological readiness. Oreg (2003) resistance to change (RTC) scale was used to measure academic staff's resistance to change (RTC). The scale consists of five factors, with a total of 17 items.

- Routine seeking – 5 items
- Emotional reaction – 4 items
- Short-Term thinking - 4 items
- Cognitive rigidity – 4 items
- Resistance to change scale – 17 items

A 6-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree), was used to evaluate the factors.

The technology self-efficacy scale of Kent and Giles (2017) was used to measure technology self-efficacy. The scale consists of six items. A six-point Likert scale ranging from 1 (not at all) to 6 (a great deal) was used.

The technology readiness index from Parasuraman and Colby (2015) was used to measure technology readiness. The scale consists of four factors and a total of 16 items to measure academic staff's propensity to accept and utilise technology.

- Optimism – 4 items
- Innovativeness – 4 items
- Discomfort – 4 items
- Insecurity – 4 items
- TRI 2.0 – 16 items

A 6-point Likert scale was used, ranging from 1 (strongly disagree) to 6 (strongly agree).

3.9 RELIABILITY OF THE MEASURING INSTRUMENTS

The developers of the instruments found them to be reliable and valid. According to Sürücü and Maslakçi (2020), the reliability of a measuring scale refers to the instrument's stability in measurement and consistency. The reliability of the scales has been tested; therefore, the researcher will need to complete an internal consistency test.

Reliability provides for measuring instruments to provide similar results if applied at different time intervals. Determining the reliability of scales in empirical research is done through various methods of test-retest reliability, alternative forms and internal consistency tests. Cronbach's alpha tests the Likert-scale surveys for reliability; the questions determine latent variables. The latent variables are either hidden or unobservable – Cronbach's alpha determines how closely related the set of items within the scale is in the specific group. The scale for Cronbach's alpha is determined between 0 and 1, with more accuracy closer to 1.

Table 3.1: Cronbach's alpha factor and scales: Resistance to change

RESISTANCE TO CHANGE (RTC) scale			
Factors	Author(s)	Items	Cronbach alphas
Routine seeking	Oreg (2003)	5	0.70
Emotional reaction		4	0.67
Short-term focus		4	0.67
Cognitive rigidity		4	0.66
Resistance to change scale		17	0.87

Kent and Giles (2017) did not validate their technology self-efficacy scale.

Table 3.2: Cronbach's alpha factor and scales: Technology Readiness

Technology Readiness Index (TRI 2.0)			
Factors	Author(s)	Items	Cronbach's alphas
Optimism	Parasuraman and Colby (2015)	4	0.80
Innovativeness		4	0.80
Discomfort		4	0.80
Insecurity		4	0.67
Technology Readiness Index (TRI 2.0)		16	

3.10 DATA COLLECTION

During the research procedure, the questionnaire was uploaded to Microsoft Forms, an online survey platform. The questionnaire collected pertinent information regarding the variables of interest. Using an electronic questionnaire facilitated distribution and response collection. The University's corporate relations unit functioned as gatekeeper. In this instance, they distributed the link to the electronic questionnaire to the sample population of North-West University (NWU) academicians. The distribution was conducted via email or other suitable channels.

After receiving the link to the questionnaire, respondents could access it and submit their responses online. Microsoft Forms provided an intuitive interface for respondents to navigate the questionnaire and electronically submit their responses. This technique eliminated the need for paper documentation and streamlined the data collection.

Responses were stored securely on Microsoft Forms following the data collection phase. The researcher exported the raw data to an Excel spreadsheet for further analysis. The spreadsheet allowed data to be organised, sorted and cleaned as necessary.

The data from the Excel spreadsheet was imported into SPSS (Statistical Package for the Social Sciences), a widely used statistical analysis software program, to conduct statistical analysis. SPSS offers a variety of instruments and methods for data manipulation, descriptive statistics and inference analysis. SPSS allowed researchers to implement numerous statistical tests, generate reports and draw conclusions based on data analysis.

Using electronic distribution, data storage, and software applications such as Excel and SPSS made the research process more effective, streamlined and amenable to data analysis. It enabled the researcher to manage and analyse data effectively, facilitating the exploration of research questions and generating insightful conclusions from collected data.

3.11 DATA ANALYSIS

To answer the research questions, the following statistical techniques were used. Descriptive statistics were calculated for all items in the questionnaire. Categorical variables were reported as frequencies and percentages. Means and standard deviations were reported for question items measured on a Likert scale.

Cronbach's alpha values were reported as a measure of reliability. Mediation analysis was done to determine if technology self-efficacy mediated the influence of resistance to change (RTC) and

technology readiness. The Sobel test and bootstrapped confidence intervals were reported. Also, mean factor scores were calculated for each construct. These factor scores were summarised by reporting means and standard deviations.

All statistical tests were two-tailed, and the type I error rate was set to $\alpha=0.05$. However, due to the nature of the sample, p-values were only reported for completeness' sake. In this study, effect sizes were used for interpretation purposes. Cohen's d was calculated to determine practical significant differences between standardised means. The following guideline values were used: an effect size of |0.2| indicated a small effect or practical non-significant difference, an effect size of |0.5| indicated a medium effect or practical visible difference, and |0.8| indicated a large effect or practical significant difference.

3.12 CHAPTER SUMMARY

The chapter on research methodology and design offered a comprehensive examination of the chosen approach to study the impact of academic staff's resistance to change (RTC) on technology readiness, particularly emphasising the mediating influence of self-efficacy. The study seeks insights into the strategies academic personnel can adopt to incorporate novel technological tools into their teaching practices successfully.

The research questions aimed to investigate the correlation between the resistance to change (RTC) exhibited by academic staff and their level of technology readiness. Additionally, this study aimed to explore the potential mediating influence of self-efficacy within this particular context.

The chapter on research methodology and design established the fundamental framework for conducting a thorough examination of the intricacies associated with incorporating technology in higher education. By employing a survey and quantitative analysis, this study aimed to contribute valuable insights that can guide future endeavours focused on facilitating the effective adoption and integration of technology within educational environments.

The following chapter will discuss the data analysis and results of the research on resistance to change, technology self-efficacy and technology readiness.

CHAPTER 4: DATA ANALYSIS AND RESULTS

4.1 INTRODUCTION

The previous chapter included a full explanation of the research strategy and procedures that were used in this particular investigation. This chapter presents an analysis and interpretation of the empirical data gathered from the respondents. The study's primary objectives were to investigate the influence of academic staff's resistance to change (RTC) regarding technology readiness and the mediating role of technology self-efficacy. The study research questions were formulated following these objectives: 1) What are the academic staff's resistance to change (RTC), technology self-efficacy and technology readiness levels? 2) Is there a relation between resistance to change (RTC) and technology readiness? 3) Does technology self-efficacy mediate the influence of resistance to change (RTC) and technology?

This chapter includes an overview of the demographic profile of the study participants and a descriptive analysis of the constructs that are the subject of the investigation. The computation of Cronbach's alpha values is used as a methodological approach to determine the reliability and consistency of the measuring instruments used. This evaluation aims to determine the degree to which the measurement instruments are internally consistent.

4.2 DESCRIPTIVE STATISTICS OF THE DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

The acquisition of participant data is a crucial stage in this research activity, as it contributes to developing thorough empirical insights. This pivotal phase involved an analysis of the demographic attributes of the study's participants, providing a comprehensive understanding of the profiles of the research cohort. This study aimed to place its findings within the broader framework of the academic entity by carefully examining demographic factors such as age, gender, academic affiliation and professional experience. The examination of these demographic aspects provided the context for the applicability of the research results and provided a fundamental structure for identifying potential differences in responses among different demographic groups. The examination of demographic factors was essential as a first step for the subsequent comprehensive analysis and interpretation of the substantive constructs being studied.

Table 4.1: Characteristics of the Respondents

Demographic	Variable	Frequency	Percentage
What is your gender?	Female	48	50.5
	Male	47	49.5
What is your age group?	25 – 34	20	21.1
	35 – 44	32	33.7
	45 – 54	20	21.1
	55 – 64	20	21.1
	Older than 64 years	3	3.2
What is your highest qualification?	Bachelor's degree, Advanced Diplomas, Post Graduate Certificate and B-tech	1	1.1
	Doctoral degree	64	67.4
	Honours degree, Post Graduate Diploma and Professional Qualifications	4	4.2
	Master's degree	26	27.4

Demographic	Variable	Frequency	Percentage
Indicate in which faculty you work.	Economic and Management Sciences	9	9.5
	Education	10	10.5
	Engineering	3	3.2
	Health Sciences	21	22.1
	Humanities	21	22.1
	Law	1	1.1
	Natural and Agricultural Sciences	27	28.4
	Theology	3	3.2
Indicate at which campus you work.	Mahikeng Campus	20	21.1
	Potchefstroom Campus	59	62.1
	Vanderbijlpark Campus	16	16.8
Indicate your academic position.	Associate professor	13	13.7
	Junior lecturer	5	5.3
	Lecturer	35	36.8
	Professor	14	14.7
	Senior lecturer	28	29.5

The research participants have a comprehensive representation across numerous categorical characteristics regarding their demographic profile. Concerning gender distribution, the results show an almost equal division, with 50.5% identifying themselves as female and 49.5% as male. The analysis of age distribution demonstrates a diverse population, wherein the most significant proportion is concentrated within the 35-44 age bracket (33.7%), closely followed by the 25-34 age category (21.1%). The study sample included individuals aged 55-64, accounting for 21.1% of the total participants, while those aged 65 and above comprised 3.2% of the sample.

The educational qualifications of the individuals surveyed revealed a significant majority (67.4%) holding Doctoral degrees, while 27.4% had master's degrees. The distribution of faculties demonstrates a comprehensive representation, with Natural and Agricultural Sciences accounting for 28.4% and Health Sciences accounting for 22.1%, both of which are significant numbers. Regarding campus affiliation, the majority of individuals are associated with Potchefstroom Campus (62.1%), followed by Mahikeng Campus (21.1%) and Vanderbijlpark Campus (16.8%). Academic employment was distributed over several levels, wherein the most prominent group consisted of lecturers (36.8%), followed by senior lecturers (29.5%) and associate professors (13.7%).

The educational credentials of the participants demonstrate a significant predominance of individuals with PhD degrees (67.4%), suggesting a considerable level of scholarly proficiency and speciality within the surveyed population. The inclusion of individuals with master's degrees (27.4%) in the survey adds to its overall credibility since it incorporates insights from a diverse set of academic backgrounds. The distribution among faculties demonstrates a diverse representation, highlighting the interdisciplinary character of the study.

The campus affiliation data provides insight into the distribution of participants across different geographical locations, revealing that most participants (62.1%) were affiliated with the Potchefstroom Campus. This observation highlights the significance of considering possible dynamics peculiar to the campus context in the ensuing research. The researcher's understanding of the academic hierarchy within the study population was facilitated by the various academic positions held by the respondents, which included lecturers (36.8%), senior lecturers (29.5%), and associate professors (13.7%).

4.3 DESCRIPTIVE STATISTICS OF ACADEMIC STAFF'S RESISTANCE TO CHANGE LEVELS

In this section, the objective was to determine, with the use of Oreg's resistance to change (RTC) scale, the participants' attitudes and tendencies towards change. Using this scale, the researcher investigated the individuals' openness to changes in their lives, especially in their working environment. A six-point Likert scale was used: 1 = Strongly disagree, 2 = Disagree, 3 = Inclined to disagree, 4 = Inclined to agree, 5 = Agree, 6 = Strongly Agree.

The combined responses for the four constructs of the measuring instrument, resistance to change (RTC), are routine seeking, emotional reaction, short-term thinking and cognitive rigidity.

Table 4.2: Responses to the constructs on the resistance to change scale

	N	1	2	3	4	5	6	Mean	SD
Routine seeking									
I generally consider changes to be a negative thing.	95	32 (34%)	40 (42%)	15 (16%)	7 (7.4%)	1 (1.1%)	0 (0%)	2.00	0.95
I will take a routine day over a day full of unexpected events at any time.	95	5 (5.3%)	19 (20%)	22 (23%)	20 (21%)	13 (14%)	16 (17%)	3.68	1.50
I like to do the same old things rather than try new and different ones.	95	26 (27%)	40 (42%)	15 (16%)	7 (7.4%)	1 (1.1%)	6 (6.3%)	2.32	1.32
Whenever my life forms a stable routine, I look for ways to change it. ^a	95	9 (9.5%)	16 (17%)	26 (27%)	18 (19%)	6 (6.3%)	20 (21%)	3.59	1.60
I'd rather be bored than surprised.	95	40 (42%)	32 (34%)	5 (5.3%)	10 (11%)	1 (1.1%)	7 (7.4%)	2.17	1.47
Emotional reaction									
If I were to be informed that there would be a significant change regarding how things are done, I would probably feel stressed.	95	13 (14%)	16 (17%)	20 (21%)	25 (26%)	7 (7.4%)	14 (15%)	3.41	1.57
When I am informed of a change of plans, I tense up a bit.	95	12 (13%)	21 (22%)	19 (20%)	26 (27%)	3 (3.2%)	14 (15%)	3.31	1.54
When things do not go according to plan, it stresses me out.	95	8 (8.4%)	10 (11%)	21 (22%)	22 (23%)	11 (12%)	23 (24%)	3.92	1.58
A sudden change in my method of delivery will make me feel uncomfortable.	95	11 (12%)	19 (20%)	16 (17%)	24 (25%)	1 (1.1%)	24 (25%)	3.60	1.70

	N	1	2	3	4	5	6	Mean	SD
Short-term thinking									
Changing plans seems like a real hassle to me.	95	10 (11%)	30 (32%)	22 (23%)	19 (20%)	3 (3.2%)	11 (12%)	3.08	1.46
Often, I feel a bit uncomfortable even about changes that may potentially improve my life.	95	24 (25%)	26 (27%)	13 (14%)	22 (23%)	1 (1.1%)	9 (9.5%)	2.76	1.54
When someone pressures me to change something, I tend to resist it even if I think the change may ultimately benefit me.	95	29 (31%)	33 (35%)	16 (17%)	9 (9.5%)	4 (4.2%)	4 (4.2%)	2.35	1.34
I sometimes find myself avoiding changes that I know will be good for me.	95	34 (36%)	28 (29%)	15 (16%)	11 (12%)	2 (2.1%)	5 (5.3%)	2.31	1.39
Cognitive rigidity									
I often change my mind. ^a	95	2 (2.1%)	23 (24%)	22 (23%)	23 (24%)	9 (9.5%)	16 (17%)	3.65	1.43
I don't change my mind easily.	95	12 (13%)	28 (29%)	25 (26%)	13 (14%)	3 (3.2%)	14 (15%)	3.09	1.55
Once I've come to a conclusion, I'm not likely to change my mind.	95	11 (12%)	26 (27%)	25 (26%)	13 (14%)	4 (4.2%)	16 (17%)	3.22	1.59
My views are very consistent over time	95	2 (2.1%)	14 (15%)	18 (19%)	30 (32%)	7 (7.4%)	24 (25%)	4.03	1.44

^a This item was reverse coded prior to data analysis

The participants in this study, on average, exhibited a significant degree of resistance towards activities designed to establish routines. The survey analysis revealed a wide array of viewpoints, indicative of a heterogeneous assortment of concerns held by individuals concerning the notions of routine and change. It is worth mentioning that a considerable percentage of the participants (19%) indicated agreement or strong agreement regarding the concept of resistance to change. Conversely, a substantial percentage (45%) expressed strong opposition or disdain towards the practice of routine seeking. Although participants indicated a lack of inclination towards routine and consistency, the results indicate that the academic community prefers stability and regularity. The statistical analysis indicates that academic staff value familiarity, consistency and stability to a certain extent, although they are adaptable to novelty and change to varying degrees, depending on the circumstances or contexts at hand.

A moderate level of emotional sensitivity towards change characterised the academic environment. However, the degrees of apprehension or distress academic staff encountered varied considerably. A considerable percentage of respondents (61%) demonstrated an increased inclination towards stress when their habitual routines were interrupted, whereas 39% exhibited a diminished susceptibility to stress in transitional circumstances. A higher inclination towards positive emotional responses or adaptability may influence the observed phenomena. The results suggest that many people exhibited emotional reactions when confronted with change, predominantly marked by anxiety and disquiet, especially when unexpected adjustments were made to their preparations. Introducing changes within academic environments thus requires efficiently handling emotional reactions to ensure implementation success.

Participants demonstrated resilience when confronted with imperative short-term cognitive tasks amid constant environmental changes, although their perceptions of the obstacles and emotional turmoil associated with the transitioning process varied considerably. Significantly, 60% of participants reported distress and annoyance when compelled to alter their initial objectives. The data offer a comprehensive understanding of the change phenomenon, uncovering feelings of disquiet and resistance towards change, particularly detrimental ones. Nevertheless, a prevalent tendency existed to adopt advantageous changes, especially when confronted with external influences.

The cognitive rigidity exhibited by the study participants was moderate. Participants had varying perspectives concerning maintaining continuity over time and changing concepts. A considerable proportion of respondents (approximately 50% to 57%) strongly agreed with cognitive inflexibility, which denotes an unwillingness to modify one's initial viewpoints and a propensity to stick to them.

The survey's results provide insight into participants' viewpoints towards change by examining their responses to various questions designed to measure resistance to change (RTC). Based on the obtained mean score of 2.0 for the statement "I generally consider changes to be a negative thing," it can be inferred that the participants generally had a negative perception towards changes. The participants also appeared to place importance on adhering to a regular schedule, as seen by the average score of 3.7 assigned to the statement, "I prefer a day characterised by routine activities rather than one filled with unforeseen occurrences." The data's moderate level of discomfort with change was further supported by statements such as "I actively seek ways to disrupt my established routine whenever it becomes stable" (mean = 3.4) and "In the event of being notified about a substantial alteration in the way things are conducted, I would likely experience a sense of stress" (mean = 3.3). The mean score for statements like "When individuals exert pressure on me to modify something, I tend to resist it, even if I believe that the change might ultimately be advantageous for me" was 2.3.

On the other hand, specific evidence indicates participants' willingness to embrace change, as demonstrated by the average score of 3.6 in answer to the statement, "I frequently alter my opinions." The data reveals a diverse spectrum of resistance, discomfort and intermittent receptiveness among individuals, underscoring the intricate nature of their attitudes and responses towards change. This statement elucidates a multifaceted viewpoint regarding the concept of change.

In conclusion, the research underscores the complex and diverse characteristics of how individuals react to transformations in academic environments. Although academic personnel generally preferred stability and routine, they also demonstrated a significant range of cognitive flexibility and emotional responses.

4.4 DESCRIPTIVE STATISTICS OF TECHNOLOGY SELF-EFFICACY LEVELS OF ACADEMIC STAFF

The technical self-efficacy theory is grounded in Bandura's theory of self-efficacy, wherein an individual's perceived capability to execute a task successfully is regarded as a robust indicator of their subsequent performance in that endeavour (Bandura, 1977).

The technology self-efficacy scale of Kent and Giles (2017) consists of six items, ranging from 1 (not at all) to 6 (a great deal), to determine self-efficacy in individuals.

Table 4.3: Results of the technology self-efficacy scale

	N	1	2	3	4	5	6	Mean	SD
How well prepared are you to evaluate software to support teaching and learning?	95	1 (1.1%)	6 (6.3%)	17 (18%)	19 (20%)	15 (16%)	37 (39%)	4.60	1.38
To what extent can you integrate technology across the curriculum?	95	0 (0%)	5 (5.3%)	10 (11%)	27 (28%)	20 (21%)	33 (35%)	4.69	1.20
How capable are you of determining why, when and how to use technology in education?	95	1 (1.1%)	6 (6.3%)	7 (7.4%)	26 (27%)	16 (17%)	39 (41%)	4.76	1.29
To what extent do you feel prepared to select and utilise assistive technologies?	95	1 (1.1%)	7 (7.4%)	5 (5.3%)	34 (36%)	16 (17%)	32 (34%)	4.61	1.27
To what extent did you incorporate technology to enhance teaching and learning in the lessons you taught in your field experience this semester?	95	1 (1.1%)	5 (5.3%)	12 (13%)	24 (25%)	20 (21%)	33 (35%)	4.64	1.28

The findings collected from a sample of participants provide insights into their perceptions regarding their preparedness and ability to effectively integrate technology within educational contexts. The average score of 4.60, accompanied by moderate variability (standard deviation = 1.38), suggests that participants had an acceptance of readiness to assess software for educational purposes. Moreover, the observed capacity to incorporate technology throughout the curriculum is commendable, as evidenced by an assurance score of 4.69, signifying the participants' assurance in embracing technology across various courses. The results further indicate that the participants exhibited significant confidence (Mean = 4.76) in their ability to discern the reasons for, timing, and methods for using technology in educational settings, albeit with notable variability (SD = 1.29). The participants in the study also indicated a high level of preparedness in selecting and using assistive technologies, as evidenced by a mean score of 4.61 and a standard deviation of 1.27. The data reveals a significant level of reported use of technology during field experiences (Mean = 4.64, SD = 1.28), suggesting a favourable inclination among participants to integrate technology proficiently into their instructional approaches. In general, the statistical data indicates that the individuals surveyed had a predominantly positive perception regarding their technological preparedness and competencies. However, it is essential to note significant diversity in the responses received across the many aspects of technology integration within the educational context.

Based on the statistical data, the respondents, on average, expressed a strong sense of preparedness and confidence in their ability to engage with different aspects of technology within the educational context. The participants demonstrated a notable degree of confidence in assessing software, integrating technology into various aspects of the curriculum, identifying the rationales and approaches for employing technology in educational settings, choosing and effectively using assistive technologies, and integrating technology into their teaching experiences during field placements. The average scores for each component indicate a positive assessment, as participants generally held good views of their preparedness and proficiency in using technology for educational purposes. Standard deviations in the responses indicate that, although there is a general inclination towards positivity, variations exist in individual perspectives and experiences within the pedagogical endeavours.

The average mean score between 4.4 and 4.6 indicated a high level of competency in using technology by academic staff members; the mean indicates a positive and confident perception. The central tendency indicated a high level of perceived competence and readiness to implement technology for educational purposes.

4.5 DESCRIPTIVE STATISTICS OF TECHNOLOGY READINESS LEVELS OF ACADEMIC STAFF

The technology readiness index scale, Parasuraman and Colby (2015), consists of four-factor dimensions, including 16 items to measure the technology readiness of academic staff members.

Table 4.4: Results of the technology readiness index scale

	N	1	2	3	4	5	6	Mean	SD
Optimism									
New technologies contribute to a better quality of life	95	0 (0%)	1 (1.1%)	9 (9.5%)	21 (22%)	28 (29%)	36 (38%)	4.94	1.04
Technology gives me more freedom of mobility	95	1 (1.1%)	3 (3.2%)	4 (4.2%)	13 (14%)	30 (32%)	44 (46%)	5.11	1.11
Technology gives people more control over their daily lives	95	0 (0%)	8 (8.4%)	13 (14%)	23 (24%)	22 (23%)	29 (31%)	4.54	1.29
Technology makes me more productive in my personal life	95	1 (1.1%)	5 (5.3%)	11 (12%)	20 (21%)	28 (29%)	30 (32%)	4.67	1.24
Innovativeness									
Other people come to me for advice on new technologies	95	6 (6.3%)	8 (8.4%)	17 (18%)	27 (28%)	14 (15%)	23 (24%)	4.09	1.49
In general, I am among the first in my circle of friends to acquire new technology when it appears	95	8 (8.4%)	14 (15%)	14 (15%)	33 (35%)	10 (11%)	16 (17%)	3.75	1.49
I can usually figure out new high-tech products and services without help from others	95	4 (4.2%)	10 (11%)	14 (15%)	23 (24%)	12 (13%)	32 (34%)	4.32	1.53
I keep up with the latest technological developments in my areas of interest	95	2 (2.1%)	8 (8.4%)	19 (20%)	24 (25%)	13 (14%)	29 (31%)	4.32	1.42

	N	1	2	3	4	5	6	Mean	SD
Discomfort									
When I get technical support from a provider of a high-tech product or service, I sometimes feel as if I am being taken advantage of by someone who knows more than I do	95	29 (31%)	25 (26%)	19 (20%)	13 (14%)	1 (1.1%)	8 (8.4%)	2.54	1.49
Technical support lines are not helpful because they do not explain things in terms I understand	95	15 (16%)	21 (22%)	26 (27%)	16 (17%)	7 (7.4%)	10 (11%)	3.09	1.51
Sometimes, I think that technology systems are not designed for use by ordinary people	95	18 (19%)	29 (31%)	13 (14%)	17 (18%)	5 (5.3%)	13 (14%)	3.01	1.65
There is no such thing as a manual for a high-tech product or service that is written in plain language	95	16 (17%)	28 (29%)	17 (18%)	24 (25%)	5 (5.3%)	5 (5.3%)	2.88	1.38
Insecurity									
People are too dependent on technology to do things for them	95	9 (9.5%)	18 (19%)	16 (17%)	24 (25%)	11 (12%)	17 (18%)	3.64	1.58
Too much technology distracts people to a point that is harmful	95	7 (7.4%)	15 (16%)	15 (16%)	20 (21%)	15 (16%)	23 (24%)	3.95	1.61
Technology lowers the quality of relationships by reducing personal interaction	95	6 (6.3%)	12 (13%)	14 (15%)	19 (20%)	19 (20%)	25 (26%)	4.14	1.58
I do not feel confident Diffusion of Innovations (DoI)ng business with a place that can only be reached online	95	26 (27%)	16 (17%)	13 (14%)	11 (12%)	15 (16%)	14 (15%)	3.16	1.83

The survey yielded valuable insights into the participants' perspectives, such as optimism, innovativeness, discomfort and insecurity. Regarding optimism, most participants held an optimistic viewpoint regarding the potential impact of emerging technologies on various aspects of human existence. The findings indicate that a significant proportion of participants exhibited consensus or strong consensus with the average ratings assigned to statements such as "The integration of novel technologies enhances the overall standard of living" (4.94), "Technological advancements afford individuals greater flexibility in terms of movement" (5.11), and "Technological innovations empower individuals to exert greater influence over their day-to-day activities" (4.54). These results collectively suggest a prevailing optimistic outlook among the respondents.

The participants demonstrated a certain level of openness and willingness to embrace new technology, as evidenced by their innovativeness. Statements such as "In general, I am among the first in my social network to acquire new technology when it becomes available" (3.75) and "Other individuals seek my guidance on emerging technologies" (4.09) suggest that participants were regarded as valuable assets and early adopters within their social circles.

However, the poll also indicates a certain degree of apprehension among participants, particularly concerning technical assistance and the system's usability. A considerable proportion of respondents (31%) believed they were being exploited while seeking technical support, while 27% perceived the helplines as ineffective. In addition, a significant proportion (29%) of individuals believed that technology systems were not designed for regular use in teaching. The findings indicate a potential for irritation and unease experienced while using technology.

The concerns expressed by the participants regarding the reliance on technology and its purported negative impact on relationships serve as a clear manifestation of the element of insecurity. A considerable proportion (26%) of respondents lacked confidence in exclusively engaging in business activities online. However, 64% expressed differing levels of agreement with the assertions "Individuals excessively rely on technology to accomplish tasks" (mean = 3.64) and "An excessive amount of technology diverts individuals to a degree that is detrimental" (mean = 3.95).

In conclusion, the survey results demonstrate diverse perspectives among participants. These perspectives encompass positive views regarding the benefits of technology, a degree of ingenuity and openness, apprehension when engaging with technological platforms and seeking assistance, and concerns regarding reliability and potential harm to interpersonal connections. This complex understanding underscores the diverse range of individuals' perspectives on technology and its role in their lives.

4.6 RELIABILITY OF THE MEASURING INSTRUMENTS

To determine the reliability of the measuring instruments, Cronbach's alpha was used to examine the relation in consistency. According to Sürücü and MASLAKÇI (2020:2713-2714), Cronbach's alpha is an acceptable coefficient in literature with a value of between 0 and 1, with more accuracy closer to 1. The reliability of the factors and scales are illustrated in Table 8.

Table 4.5: Cronbach's alphas for the factors and scales of the measuring instruments

Construct	Cronbach	Mean	Standard deviation	Number of items
Resistance to change				17
Routine seeking	0.70	2.69	0.69	
Emotional reaction	0.85	3.42	1.17	
Short-term focus	0.78	2.57	1.04	
Cognitive rigidity	0.67	3.38	0.75	
Technology self-efficacy	0.93	4.52		6
Technology readiness				16
Optimism	0.89	4.73	0.97	
Innovativeness	0.91	3.98	1.2	
Discomfort	0.78	2.83	1.11	
Insecurity	0.77	3.67	1.23	
Resistance to change	0.87	3.02	0.68	
Technology self-efficacy		4.52	0.93	
Technology readiness	0.81	3.81	0.49	

The resistance to change (RTC) construct encompasses four sub-constructs: Routine Seeking, Emotional Reaction, Short-term Focus and Cognitive Rigidity. Routine Seeking has a Cronbach's alpha of 0.70, a mean of 2.69, and a standard deviation of 0.69. This suggests a moderate level of consistency in responses with a tendency towards routine-seeking behaviour. Emotional Reaction shows a higher internal consistency with a Cronbach's alpha of 0.85. The mean score of 3.42 and a standard deviation of 1.17 indicate considerable variability in emotional responses to change. Short-term Focus has a Cronbach's alpha of 0.78, a mean of 2.57, and a standard deviation of 1.04, suggesting a moderate level of short-term focus among participants. Cognitive Rigidity scores a Cronbach's alpha of 0.67, with a mean of 3.38 and a standard deviation of 0.75, indicating a lower level of internal consistency in this construct. The overall Cronbach's alpha for

the “resistance to change (RTC)” construct is 0.87, with a mean of 3.02 and a standard deviation of 0.68, demonstrating good reliability and moderate resistance to change (RTC) among participants.

Technology Self-efficacy is measured with a high Cronbach’s alpha of 0.93, indicating excellent internal consistency. The mean score is 4.52 with a standard deviation of 0.93, signifying a high level of self-reported efficacy in using technology among participants.

The Technology Readiness construct includes Optimism, Innovativeness, Discomfort and Insecurity. Optimism has a Cronbach’s alpha of 0.89, with a mean of 4.73 and a standard deviation of 0.97, indicating a positive outlook towards technology. Innovativeness scores a Cronbach’s alpha of 0.91, with a mean of 3.98 and a higher standard deviation of 1.2, reflecting varied levels of innovativeness. Discomfort has a Cronbach’s alpha of 0.78, a mean of 2.83, and a standard deviation of 1.11, suggesting some discomfort with technology. Insecurity records a Cronbach’s alpha of 0.77, with a mean of 3.67 and a standard deviation of 1.23, indicating concerns about security and privacy. The overall technology readiness score has a Cronbach’s alpha of 0.81, with a mean of 3.81 and a standard deviation of 0.49, denoting a good level of readiness to adopt technology, albeit with some reservations.

4.7 INFLUENCE OF RESISTANCE TO CHANGE AND TECHNOLOGY READINESS

Pearson product-moment correlations were used to establish the influence of resistance to change (RTC) and technology readiness.

Table 4.6: Pearson product-moment correlations

	Correlation	P-value
Technology readiness vs Resistance to change	0,071	0,492
Technology Self-efficacy vs Resistance to change	-0,475	<0.001
Technology readiness vs Technology Self-efficacy	0,313	0,002

The results of Pearson’s correlation analysis for the researched variables Technology readiness and Resistance to change, Technology Self-efficacy and Resistance to change and Technology readiness and Technology Self-efficacy provided the following information.

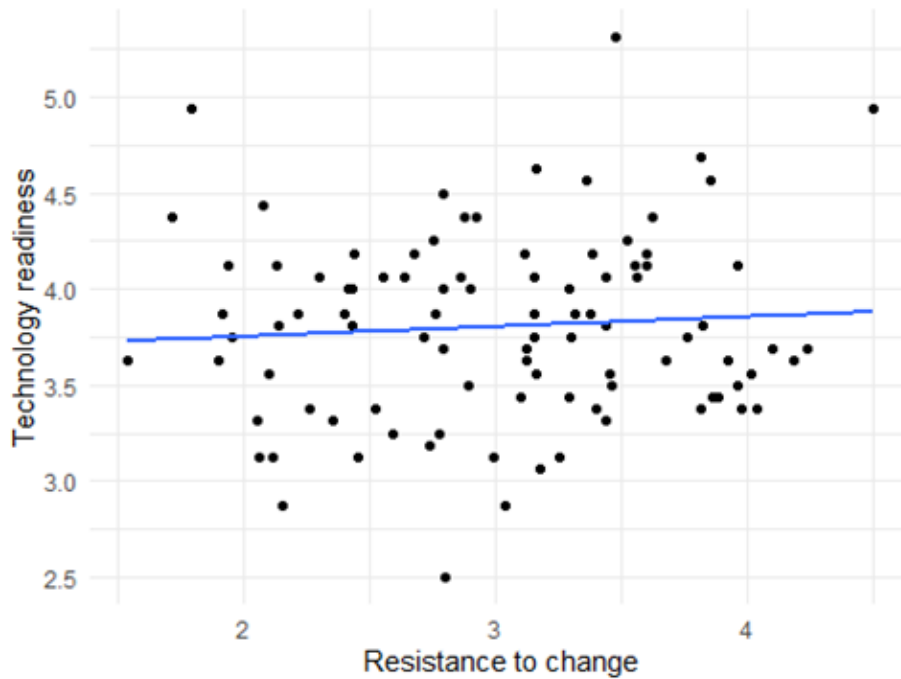


Figure 4.1: Scatter plot of the relationship between “Resistance to change” & “Technology readiness”

The correlation between technology readiness and resistance to change (RTC) displayed a correlation coefficient (r) of 0.0714 and a p -value of 0.4916. The correlation coefficient closest to zero (0.0714) suggests a weak positive correlation between technology readiness and resistance to change (RTC). The confidence interval of 95% has a range from -0.1320 to 0.2691, encompassing zero. This value supports the lack of a statistically significant correlation. The correlation between resistance to change (RTC) and technology readiness displayed a very weak and non-significant positive correlation; the significance of determining resistance to change (RTC) and the technology readiness of academics indicates a slight connection; however, the statistical data is not sufficient to confirm that resistance to change (RTC) is related to technology readiness.

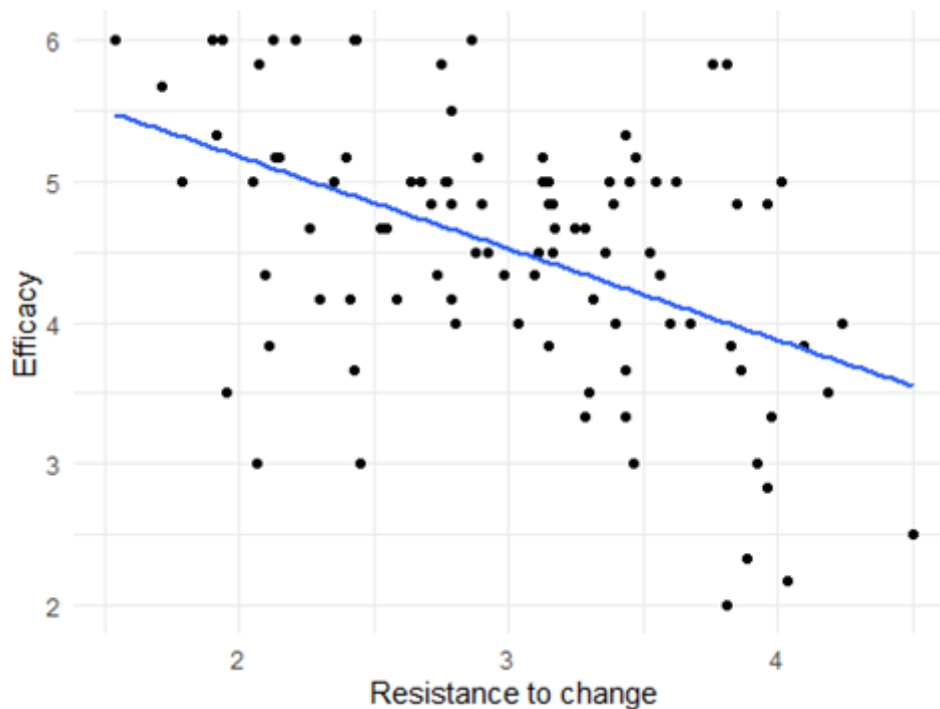


Figure 4.2: Scatter plot of the relationship between “Resistance to change” & “Self-efficacy”

The correlation between resistance and self-efficacy displayed the correlation coefficient (r): 0.4752 and the p-value as <0.001 . The correlation coefficient is negative, 0.4752, indicating a negative correlation between resistance and self-efficacy. The p-value is well below the significance level of 0.05; the value is <0.001 , which suggests a very high negative correlation. The confidence interval of 95%, which ranges between -0.6176 to -0.3026, confirms a strong negative correlation. The correlation between technology resistance and technology self-efficacy has a significant connection; the correlation indicates that strong resistance to change increases if the individual experiences a lack of technology self-efficacy. The correlation is sufficient to confirm a clear relationship between technology resistance and experiencing less technology self-efficacy.

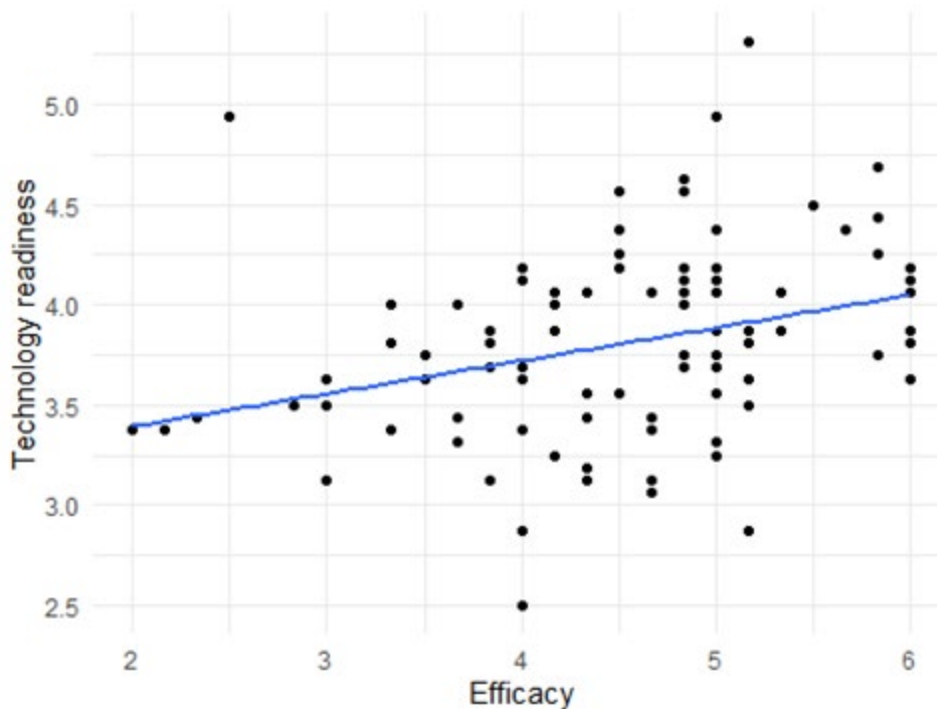


Figure 4.3: Scatter plot of the relationship between “Technology readiness” & “Self-efficacy”

The correlation between self-efficacy and technology readiness displayed a correlation coefficient (r) of 0.3126 and a p -value of 0.002041. The correlation coefficient is 0.3126, indicating a moderate correlation between self-efficacy and technology readiness. The p -value of 0.002041, less than 0.05, indicates a positive correlation. The confidence interval of 95%, which ranges between 0.1185 and 0.4837, indicates a significant positive correlation.

4.7.1 Mediation Analysis: Technology Self-Efficacy Between Resistance to Change and Technology Readiness

Considering the substantial extent of the observed inverse influence of resistance to change and self-efficacy, it is plausible to propose that self-efficacy might mitigate the association between technical readiness and resistance to change. The decrease in self-efficacy that coincides with resistance to change may subsequently impact the preparedness of academic staff to embrace and implement new technology.

4.8 CONCLUSIONS

In summary, the findings in response to the research questions have been interpreted as follows:

1) What are the academic staff's resistance to change (RTC), technology self-efficacy, and technology readiness levels? The findings suggest that a) resistance to change (RTC) exhibits moderate resistance levels. This conclusion is based on the information gathered indicating a preference for routine, experiencing discomfort in sudden change of events, even if change may be beneficial. b) Technology self-efficacy demonstrated a significantly high level of technology self-efficacy based on support available and an eagerness to use technology in education. However, the coefficient noted a definite reduction in self-efficacy; therefore, the correlation between resistance to change (RTC) and self-efficacy levels is evident. c) Technology readiness is perceived as positive, and academic staff are ready to integrate technology. In some respects, such as support and dependence on technology, the overall interpretation is positive towards technology readiness.

About the following research question, "What is the influence of resistance to change (RTC) and technology readiness?" the overall indication is that the relationship is complex. Although from the data provided, a moderate level of resistance to change (RTC) is adequate, and there is an indication of positivity towards adapting to technology, the findings suggest that various factors influence the relations; apart from resistance to change (RTC), there is a comprehensive perspective of adapting to technology. This question points to the need for further in-depth research to investigate other influential factors.

The findings for the question: "Does technology self-efficacy mediate the relationship between resistance to change (RTC) and technology readiness?" indicate an overall high level of self-efficacy in using technology. The confidence indicated by the data will have a positive impact on the academic staff's overall readiness to adjust to using technology in their pedagogy. Self-efficacy emphasises the readiness to adapt to technology in the academic environment. A decline in self-efficacy influences the readiness to change and might result in resistance to change (RTC) by using technology.

The following chapter will discuss the findings of the research results and recommendations and conclusions on resistance to change, technology self-efficacy, and technology readiness.

CHAPTER 5: DISCUSSION OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 INTRODUCTION

In this section, the investigation of the research on the influence of academic staff's resistance to change (RTC) and technology readiness and to determine the mediating role of technology self-efficacy is discussed. The research aimed to determine a conclusion on the objectives from Chapter 1. Chapter 1 discussed the research's background, objectives and problem statement, including the research questions to determine the objectives. Chapter 2 provided an extensive overview of the literature to elaborate on the theoretical foundation upon which this research was grounded. Chapter 3 discussed the research design and methods applied in the research to collect empirical data required to provide answers to the research questions from Chapter 1. Chapter 4 discussed the analysis of the research, the interpretation and the results from SPSS. The data interpretation in Chapter 4 was based on responses from 97 academic staff members. Chapter 5 consists of a discussion of the research research's findings, limitations and a conclusion based on the findings.

5.2 DISCUSSION OF DEMOGRAPHIC CHARACTERISTICS

The analysis of demographic data indicated that the academic staff members surveyed from North-West University (NWU) were almost evenly distributed, with 51% of respondents identifying as female and 50% as male. The representation of academic personnel is evident across all faculties, with Health Sciences, Humanities and Natural and Agricultural Sciences exhibiting the highest levels of engagement. Based on the responses, the employment levels of the female respondents span from the position of junior lecturer to that of associate professor with the doctorate being the highest level of educational attainment. The research's objective was to examine the effects of resistance to change (RTC), technological preparedness and self-efficacy on the pedagogical practices of academic staff members. All participants may confidently be identified as educators engaged in higher education at North-West University (NWU).

5.3 DISCUSSION OF THE RESEARCH OBJECTIVES

This section summarises the findings of the descriptive analysis of resistance to change (RTC), technology readiness and the role of self-efficacy as a mediator.

5.3.1 Exploring the levels of resistance to change, technology self-efficacy and technology readiness of academic staff

Resistance to change (RTC) research matches current scholarship, verifying Schein's claim that change is complex and diverse (Schein, 2010). This research emphasises the importance of leadership in inspiring and motivating employees during transitions, following transformational leadership theory (Burns, 1978). The similarity to self-determination theory (SDT) (Vansteenkiste *et al.*, 2012) emphasises the importance of understanding and meeting psychological needs. Chelliah (2022) research on cognitive dissonance theory shows the need to address cognitive variables in managing change resistance. The findings support the theories that posit that change is complex and that a consideration of psychological and cognitive elements is essential. According to the research findings, academic staff hesitate to create regular routines or initiate transformation. A notable fraction of participants indicate an inclination towards anticipated events instead of unexpected ones, indicating a possible difficulty in effectively overseeing initiatives to implement change. Many participants support continual pursuit, showing that the respondents value uniformity and reliability. The statistical data shows that academics value familiarity, regularity and stability. Academic staff are open to change and innovation only in some situations, indicating resistance. According to the responses, academics resist change; many academic staff value stability and consistency and dislike change initiatives. Therefore, transformational leadership, due to its emphasis on inspiring and motivating followers towards a shared vision, has the potential to facilitate the development of a positive attitude towards change. High indications of the occurrence of stress and tension as emotional reactions during periods of change underscore the need for organisations to understand these emotions and to address them comprehensively. Effectively addressing emotions is crucial for ensuring the successful implementation of change.

Academic staff with a propensity for short-term thinking encounter difficulties adapting their goals, hindering the cultivation of long-term viewpoints. Leaders can bridge the gap between academic staff's views and the long-term goals of a change endeavour by effectively communicating the positive results and potential rewards associated with the change.

The presence of cognitive rigidity undermines the capacity for adaptation that is essential for successful change. Leaders can foster an environment that promotes openness to innovative ideas, critical thinking and a readiness to reassess deeply entrenched beliefs.

In short, the effective management of inclinations towards seeking routine, emotional reactions, short-term thinking and cognitive rigidity necessitates implementing a tailored approach that incorporates leadership methodologies, emotional intelligence and a focus on objectives.

Participants often view their technological preparation and competencies positively, supporting the theoretical frameworks covered. The mean scores and standard deviations revealed participants' views and competency in using technology in education. Academic staff portraying technical self-efficacy will probably use technology to improve. Participants were open to assessing software, integrating technology into the curriculum, and using assistive technologies. The participants' high mean ratings in all three categories illustrate their self-efficacy in using technology for education. According to self-determination theory (SDT), relatedness, autonomy, and competence motivate and develop academic staff (Vansteenkiste *et al.*, 2012). The evidence supports the self-determination theory (SDT) since respondents are competent in finding appropriate explanations, timing and tactics for bringing technology into teaching. The positive mean scores across these components suggest that participants feel competent and independent in using technology, creating a pleasant learning environment. The data does not quantify flow, but users may discover a balance between technological integration challenges and their skill levels, improving their experience.

Statistics show that participants rated their technology competence and skills positively. This congruence highlights the importance of using theoretical principles in analysing and measuring participants' attitudes and responses to technology use in education. The study indicates that some participants may resist routine change, while other participants are more reluctant based on the cognitive change.

5.3.2 Technology self-efficacy mediates the influence of resistance to change and technology readiness

The survey findings provide a comprehensive overview of how participants perceive technology readiness and self-efficacy in educational settings. The findings of this study suggest that participants generally held a positive perception, particularly in areas pertaining to software evaluation, integration of technology in the curriculum, and adoption of assistive technologies. The positive evaluation aligns with the theory of technology self-efficacy, which posits that academic staff' perceptions of their technological capabilities significantly influence their actual

performance (Bandura, 1977). The results of this study provide empirical evidence that aligns with the existing body of research, which posits that self-efficacy plays a crucial role in incorporating technology into educational settings (Kent & Giles, 2017).

The participants' confidence levels in discerning the rationales, temporal aspects and methodologies for using technology in educational environments align with self-determination theory (SDT) principles. Self-determination theory (SDT) emphasises the motivators of autonomy, competence and relatedness. In technology usage, academic staff's confidence in their technical ambitions indicates their perceived competence and autonomy (Deci & Ryan, 2000). The positive association between the survey responses and self-determination theory (SDT) provides empirical evidence in favour of the proposition that fulfilling these psychological needs is associated with personal development and overall welfare.

The study also examines the influence of anxiety on technological readiness, highlighting its role as a potential source of stress, particularly among academic staff who have grown up with digital technology. The results align with prior studies indicating that anxiety may impact academic staff's inclination to engage with technology, emphasising the importance of considering psychological factors in adopting technology (Maican *et al.*, 2019). Moreover, the flow theory discourse (Tandon, 2017:87) underscores academic staff's desire to maintain an equilibrium between their skill level and the level of challenge a task presents to achieve optimal performance and experience satisfaction. According to the idea of flow in the context of technology adoption proposed by Csikszentmihalyi (1990), academic staff may perceive a flow state when their self-efficacy aligns with the challenges presented by technological tasks.

The survey findings offer valuable insights into participants' perspectives on technological readiness and self-confidence, aligning with established theoretical frameworks such as self-determination theory (SDT) and flow theory. The acknowledgement of the positive perspectives on integrating technology and the acknowledgement of the potential influence of anxiety underscores the intricate interaction of psychological elements in academic staff's experiences with technology. There is, thus, a need for comprehensive understanding when developing interventions and support systems.

5.3.3 The relationship between resistance to change, technology self-efficacy and technology readiness

The survey results align with the theoretical framework known as the technology readiness framework (TRF). According to this framework, academic staff's inclination and capacity to embrace new technology can be comprehended by considering optimism, innovativeness,

discomfort and insecurity (Jafari-Sadeghi *et al.*, 2021). The participants' optimistic perspectives regarding the influence of emerging technologies on living standards, mobility and personal agency align with the emphasis on optimism within the technology readiness framework (TRF), as highlighted by (Jafari-Sadeghi *et al.*, 2021:101). The optimistic perspective aligns with previous scholarly investigations that have established a positive correlation between optimism and readiness for technology adoption (Bartolic *et al.*, 2022). The inclination of the survey respondents to be early adopters of novel technology, as indicated by their responses to inquiries on innovativeness, contributes to the congruence with the components of the technology readiness framework (TRF) (Jafari-Sadeghi *et al.*, 2021).

Nevertheless, the survey findings indicate that the participants expressed apprehension and dissatisfaction about technical assistance and the system's usability. The discomfort experienced aligns with the theoretical framework proposed by Jafari-Sadeghi *et al.* (2021), which highlights academic staff's emotions of uneasiness or apprehension while engaging with unfamiliar technology. The technical support and system design results align with existing scholarly literature on technology implementation in the context of the COVID-19 pandemic. This body of research indicates that inadequate training and support have been significant factors leading to instructors' unease and impeding the smooth transition to online teaching (Kebritchi *et al.*, 2017; Mishra *et al.*, 2020). The challenges mentioned above underscore the importance of addressing discomfort and ensuring enough assistance to enhance academics' inclination to use technology.

The participants' apprehension about engaging in fully online usage indicates their reservations regarding the potential negative impact of technology on human connections and relationships. The conclusion above aligns with the theoretical framework proposed by Jafari-Sadeghi *et al.* (2021), which emphasises academic staff's perceptions of risk and susceptibility associated with using technology. The varying viewpoints among participants regarding the overreliance on technology and its resultant distractions underscore the intricate nature of insecurity within technology adoption. The viewpoint presented aligns with the existing body of work on the diverse nature of academic staff's views towards technology, acknowledging its advantages and potential challenges (Siegel *et al.*, 2017).

In brief, the survey's findings offer a comprehensive perspective on the participants' level of preparedness in using technology, confirming the validity of the categories outlined in the technology readiness framework (TRF): optimism, innovativeness, discomfort and insecurity. Incorporating relevant pedagogy bolsters the theoretical underpinnings of the technology readiness framework (TRF). It offers valuable perspectives on academic staff's varied

perspectives and encounters with technology – the significance of tailored interventions and support systems in enhancing technology readiness within educational settings.

5.4 MANAGERIAL IMPLICATIONS AND RECOMMENDATIONS

The findings have significant management consequences and provide essential guidelines for university authorities. Adaptive leadership tactics are essential since change opposition takes many forms. Transformational leadership is essential for motivating and empowering staff during transitions. This claim is valid given the investigation's complexity and wide range of findings. Many experts agree that change management success depends on communication, empathy, and active participation in the change process (Vlachopoulos, 2021). The participants' positive assessments of their digital readiness and competencies emphasise the need for technology staff. Training and development are noted to improve employees' technological competency and keep their knowledge current. This research aligns with ideas that emphasise psychological and cognitive change acceptance, emphasising the importance of these aspects in change management. Organisations should reduce employee fear and boost their confidence in adopting new technologies to facilitate a seamless transition without disruption. The tertiary institution can consider using tailored technology strategies because academics have both positive and negative views of technology. Technology can be better received and integrated by recognising and appreciating the many degrees of resistance to change.

Along with the self-determination theory (SDT) (Sørensen *et al.*, 2009), this research underlines the necessity of increasing connectedness, autonomy, and competence to motivate academic staff; environments that do not address these psychological elements are unlikely to achieve these goals. Addressing concerns about system use, technical support, and interpersonal harm is crucial. Implementing readily accessible and effective technical assistance and educational activities to promote safe technology use may address these concerns. Organisations must manage technological dependence concerns proactively while recognising participants' favourable opinions of new technology's impact on their lives and their desire to adopt innovative practices. A deliberate approach to addressing pertinent concerns and a balance between integrating new technologies and providing support can create a technologically advanced organisational culture that fosters well-being. Managerial awareness can be achieved through proactive interaction with employees, regular assessment of technological attitudes and customisation of techniques to meet academic staff requirements and concerns. An adaptable attitude to change, seamless technological integration and effective leadership tactics are needed to create a productive and enjoyable workplace.

5.5 LIMITATIONS OF THE RESEARCH

The research provides insight into academic staff's resistance to change (RTC) and technology readiness. Due to the study's specific focus on academic workers, the research findings may be limited in generalisability. Extrapolating the findings to other organisational contexts or industries may be difficult. This study's cross-sectional approach limits understanding of causation and temporal dynamics of change and self-efficacy. Longitudinal studies may help explain how parameters vary over time. The quantitative methodology used in the research yielded valid statistical results, but it may have been unable to explain change resistance fully. The research may also overlook organisational or environmental factors that can cause change resistance. The current research did not address the potential impact of institutional regulations, leadership styles and corporate culture.

In conclusion, the research might have considered including alternative aspects of technology self-efficacy. The research may not have comprehensively assessed the aspects contributing to self-efficacy, such as prior experience, training quality and the complexity of the technology used.

5.6 CONCLUSIONS

The study investigating the influence of resistance to change (RTC) and technology self-efficacy provides valuable insights into the complex domain of attitudes and behaviours within educational environments. The findings of this study, particularly the negative relationship between resistance and self-efficacy, are consistent with previous theoretical predictions and highlight the complex dynamics involved in people's responses to technological progress. Using theoretical frameworks, such as flow theory and self-determination theory (SDT), enhances the understanding of the data by emphasising the psychological and motivational elements involved. The research emphasises the importance of leadership, psychological prerequisites and cognitive components in effectively addressing resistance. Moreover, the analysis of participants' perspectives on optimism, innovativeness, discomfort and insecurity provides a thorough portrayal of academic staff's perceptions of the impact of technology on their academic environment and everyday existence. The robustness of the study is enhanced by recognising and considering a range of perspectives, as well as developing a sophisticated comprehension of both positive and negative attitudes.

5.7 AREAS OF FUTURE RESEARCH

Additional investigation could extend the scope of these findings by exploring specific treatments and approaches that target the improvement of technology adoption and change management

within academic settings. Based on the conclusions of the study investigating the influence of resistance to change (RTC) and technology self-efficacy, three potential areas for future research are:

- An investigation into specific leadership strategies or interventions that effectively mitigate resistance to technological change among academic staff. Exploring how different leadership styles, communication approaches and change management strategies influence academic staff's self-efficacy and readiness for technological adaptation could be valuable.
- A longitudinal study to track the evolution of technology self-efficacy and resistance over an extended period could offer insights into how these attitudes change and adapt over time.
- Deeper qualitative research focusing on the nuanced perceptions of academic staff regarding technology's impact on their academic environment could provide a more detailed understanding. Investigating the specific factors that contribute to optimism, discomfort, innovativeness, and insecurity among academic staff in embracing technology could be beneficial to all stakeholders, especially university management.

5.8 SUMMARY

The study provides insight into the complex dynamics that underlie academic staff's attitudes and responses towards technology readiness and resistance to change (RTC) in academic staff members. The research highlights the importance of leadership, psychological prerequisites and cognitive characteristics in overcoming resistance to change (RTC). The participants' optimistic and imaginative tendencies and favourable evaluations of their technical readiness and talents follow theoretical frameworks that emphasise the significance of relatedness, autonomy and competence in driving academic staff motivation. Furthermore, the study recognises the existence of a wide range of perspectives concerning technology, encompassing both optimistic anticipations and concerns regarding the potential negative impact on relationships and over-reliance on technology. The managerial implications and recommendations highlight the need for successful change management through leadership, support and consideration of cognitive factors. Recognising the study's limitations, such as its reliance on self-reported data, is crucial, notwithstanding the robust findings. This research significantly contributes to instructional technology and organisational psychology by building a solid groundwork for future exploration and practical applications.

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ANNEXURE A: INTRODUCTION LETTER



REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT

North-West University

January 2023

Title of study:

Exploring the relationship between academic staff's resistance to change and technology readiness: The mediating role of technology self-efficacy.

Dear participant,

I, Ronel Fourie, am researching with my research supervisor, Prof PA Botha, in the North-West Business School towards a Master's Degree in Business Administration at North-West University.

We are inviting you to participate in our study.

The study explores the relationship between resistance to change and technology readiness.

The study will establish the various levels of resistance to change, technology self-efficacy and technology readiness for academic staff. The study will determine if there is a relation between resistance to change, technology self-efficacy and technology readiness and whether self-efficacy can mediate the relation between resistance to change and technology readiness.

Potential benefits of the study is exploring the mediating role of self-efficacy in resistance to change and technology readiness.

Potential risks are the reluctance of participation; the gatekeeper will be requested to circulate the request sporadically if the required number of responses is inefficient.

Thank you for considering our request.

Yours sincerely,

Mrs Ronel Fourie

ANNEXURE B: INFORMED CONSENT

North-West University

Title of study:

Exploring the relationship between academic staff's resistance to change and technology readiness: The mediating role of technology self-efficacy.

Dear participant,

I, Ronel Fourie, am Pursuing a Master of Business Administration at North-West University under the supervision of Professor PA Botha from the North-West Business School. I am pleased to invite you to take part in our study.

The primary objective of this study is to investigate the influence of resistance to change among academic staff on Higher education institution (HEI) technology readiness, focusing on the mediating role of technology self-efficacy. This study investigates the potential relationship between resistance to change, technology self-efficacy and technology readiness. Specifically, we wish to determine the mediating role of self-efficacy between resistance to change and technology readiness. Participating in this study, you will contribute to advancing knowledge in the academic context regarding organisational change and technology adoption.

We will ensure periodic request distribution to address this issue, aiming for an optimal response rate while respecting your time and availability.

Your participation in this study will significantly enhance your contribution to the body of knowledge in this field. Please do not hesitate to contact me with any questions or requests for additional information.

I appreciate your consideration.

Sincere regards,

Mrs. Ronel Fourie

ANNEXURE C: QUESTIONNAIRE

SECTION 1: DEMOGRAPHIC INFORMATION

1. What is your gender?

Male	1
Female	2
Prefer not to say	3

2. What is your age group?

18-24 years old	1
25-34 years old	2
35-44 years old	3
45-54 years old	4
55-64 years old	5
Older than 64 years	6

3. What is your highest qualification

Grade 12 (National Senior Certificate) or National (vocational) Cert. level 4	1
Higher Certificates or Advanced National (vocational) Cert.	2
National Diploma or Advanced certificates	3
Bachelor's degree, Advanced Diplomas, Post Graduate Certificate and B-tech	4
Honours degree, Post Graduate Diploma and Professional Qualifications	5
Master's degree	6
Doctor's degree	7

4. Indicate in which faculty you work.

Economic and Management Sciences	1
Engineering	2
Education	3
Health Sciences	4
Humanities	5
Law	6
Natural and Agricultural Sciences	7
Theology	8

5. Indicate at which camPerceived usefulness (PU)s you work.

Mahikeng CamPerceived usefulness (PU)s	1
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Potchefstroom CamPerceived usefulness (PU)s.	2
Vanderbijlpark CamPerceived usefulness (PU)s.	3

6. Indicate your academic position.

Junior lecturer	1
Lecturer	2
Senior lecturer	3
Associate professor	4
Professor	5

SECTION 2: RESISTANCE TO CHANGE

Instructions:

Listed below are several statements regarding one's general beliefs and attitudes towards change. Please indicate the degree to which you agree or disagree with each statement by choosing the appropriate number on the scale.

Statements		Strongly disagree	Disagree	Inclined to disagree	Inclined to agree	Agree	Strongly agree
		1	2	3	4	5	6
1	I generally consider changes to be a negative thing.	1	2	3	4	5	6
2	I will take a routine day over a day full of unexpected events at any time.	1	2	3	4	5	6
3	I like to do the same old things rather than try new and different ones.	1	2	3	4	5	6
4	Whenever my life forms a stable routine, I look for ways to change it.	1	2	3	4	5	6
5	I'd rather be bored than surprised.	1	2	3	4	5	6
6	If I were to be informed that there would be a significant change regarding how things are done, I would probably feel stressed.	1	2	3	4	5	6
7	When I am informed of a change of plans, I tense up a bit.	1	2	3	4	5	6

Statements		Strongly disagree	Disagree	Inclined to disagree	Inclined to agree	Agree	Strongly agree
8	When things do not go according to plan, it stresses me out.	1	2	3	4	5	6
9	A sudden change in my method of delivery will make me feel uncomfortable.	1	2	3	4	5	6
10	Changing plans seems like a real hassle to me.	1	2	3	4	5	6
11	Often, I feel a bit uncomfortable even about changes that may potentially improve my life.	1	2	3	4	5	6
12	When someone pressures me to change something, I tend to resist it even if I think the change may ultimately benefit me.	1	2	3	4	5	6
13	I sometimes find myself avoiding changes that I know will be good for me.	1	2	3	4	5	6
14	I often change my mind.	1	2	3	4	5	6
15	I don't change my mind easily.	1	2	3	4	5	6
16	Once I've come to a conclusion, I'm not likely to change my mind.	1	2	3	4	5	6
17	My views are very consistent over time	1	2	3	4	5	6

SECTION 3: TECHNOLOGY SELF-EFFICACY

Listed below are several statements regarding one's general beliefs and attitudes towards your technology self-efficacy. Please rate yourself on a 6-point Likert scale ranging from 1 (Not at All) to 6 (A Great Deal)

Statements		Not at all	Very little	A little	Somewhat	Quite a bit	A great deal
1	How competent do you perceive yourself in selecting and using various media to support teaching and learning?	1	2	3	4	5	6
2	How well prepared are you to evaluate software to support teaching and learning?	1	2	3	4	5	6
3	To what extent can you integrate technology across the curriculum?	1	2	3	4	5	6
4	How capable are you of determining why, when and how to use technology in education?	1	2	3	4	5	6

5	To what extent do you feel prepared to select and utilise assistive technologies?	1	2	3	4	5	6
6	To what extent did you incorporate technology to enhance teaching and learning in the lessons you taught in your field experience this semester?	1	2	3	4	5	6

SECTION 4: TECHNOLOGY READINESS

Listed below are several statements regarding one's general beliefs and attitudes towards your technology readiness. Please rate your readiness to use technology on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Statements		Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
		1	2	3	4	5	6
1	New technologies contribute to a better quality of life	1	2	3	4	5	6
2	Technology gives me more freedom of mobility	1	2	3	4	5	6
3	Technology gives people more control over their daily lives	1	2	3	4	5	6
4	Technology makes me more productive in my personal life	1	2	3	4	5	6
5	Other people come to me for advice on new technologies	1	2	3	4	5	6
6	In general, I am among the first in my circle of friends to acquire new technology when it appears	1	2	3	4	5	6
7	I can usually figure out new high-tech products and services without help from others	1	2	3	4	5	6
8	I keep up with the latest technological developments in my areas of interest	1	2	3	4	5	6
7	I can usually figure out new high-tech products and services without help from others	1	2	3	4	5	6
8	I keep up with the latest technological developments in my areas of interest	1	2	3	4	5	6
9	When I get technical support from a provider of a high-tech product or service, I sometimes feel as if I am being taken advantage of by someone who knows more than I do	1	2	3	4	5	6
10	Technical support lines are not helpful because they do not explain things in terms I understand	1	2	3	4	5	6
11	Sometimes, I think that technology systems are not designed for use by ordinary people	1	2	3	4	5	6
12	There is no such thing as a manual for a high-tech product or service that is written in plain language	1	2	3	4	5	6
13	People are too dependent on technology to do things for them	1	2	3	4	5	6
14	Too much technology distracts people to a point that is harmful	1	2	3	4	5	6
15	Technology lowers the quality of relationships by reducing personal interaction	1	2	3	4	5	6

16	I do not feel confident Diffusion of Innovations (DOI)ng business with a place that can only be reached online	1	2	3	4	5	6
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ANNEXURE D: ETHICAL CLEARANCE



Private Bag X1290, Potchefstroom
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Tel: 018 299-1111/2222
Fax: 018 299-4910
Web: <http://www.nwu.ac.za>

Senate Committee for Research Ethics
Tel: 018 299-484
Feziwe.Mseleni@nwu.ac.za

24 February 2023

ETHICS APPROVAL LETTER OF STUDY

Based on approval by the **Economic and Management Sciences Research Ethics Committee (EMS-REC)** on 24/02/2023, the Economic and Management Sciences Research Ethics Committee hereby **approves** your study as indicated below. This implies that the North-West University Senate Committee for Research Ethics (NWU-REC) grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

Study title: Investigating the influence of academic staff's resistance to change on technology readiness: The mediating role of technology self-efficacy																																									
Study Leader/Supervisor (Principal Investigator)/Researcher): Prof PA Botha – MBA																																									
Student: Fourie, R (11689323)																																									
<table border="1" style="margin: auto;"> <tr> <td>N</td><td>W</td><td>U</td><td>-</td><td>0</td><td>0</td><td>5</td><td>7</td><td>4</td><td>-</td><td>2</td><td>3</td><td>-</td><td>A</td><td>4</td> </tr> <tr> <td colspan="3">Institution</td> <td colspan="5">Study Number</td> <td colspan="2">Year</td> <td colspan="5">Status</td> </tr> </table> <p>Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation</p>												N	W	U	-	0	0	5	7	4	-	2	3	-	A	4	Institution			Study Number					Year		Status				
N	W	U	-	0	0	5	7	4	-	2	3	-	A	4																											
Institution			Study Number					Year		Status																															
Application Type: Commencement date: 1/4/2023 Expiry date: 1/5/2024 Approval of the study is initially provided for a year, after which continuation of the study is dependent on receipt and review of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation.																																									
Risk:										Low																															

Special in process conditions of the research for approval (if applicable):

-
- General conditions:**

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, the following general terms and conditions will apply:

 - The study leader/supervisor (principle investigator)/researcher must report in the prescribed format to the EMS-REC:
 - annually (or as otherwise requested) on the monitoring of the study, whereby a letter of continuation will be provided, and upon completion of the study; and
 - without any delay in case of any adverse event or incident (or any matter that interrupts sound ethical principles) during the course of the study.
 - The approval applies strictly to the proposal as stipulated in the application form. Should any amendments to the proposal be deemed necessary during the course of the study, the study leader/researcher must apply for approval of these amendments at the EMS-REC, prior to implementation. Should there be any deviations from the study proposal without the necessary approval of such amendments, the ethics approval is immediately and automatically forfeited.
 - Annually a number of studies may be randomly selected for an external audit.

- *The date of approval indicates the first date that the study may be started. In the interest of ethical responsibility, the NWU-SCRE and EMS-REC reserves the right to:*
 - *request access to any information or data at any time during the course or after completion of the study;*
 - *to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process;*
 - *withdraw or postpone approval if:*
 - *any unethical principles or practices of the study are revealed or suspected;*
 - *it becomes apparent that any relevant information was withheld from the EMS-REC or that information has been false or misrepresented;*
 - *submission of the annual (or otherwise stipulated) monitoring report, the required amendments, or reporting of adverse events or incidents was not done in a timely manner and accurately; and / or*
 - *new institutional rules, national legislation or international conventions deem it necessary.*

The EMS-REC would like to remain at your service as scientist and researcher, and wishes you well with your study. Please do not hesitate to contact the EMS-REC or the NWU-SCRE for any further enquiries or requests for assistance.

Yours sincerely,

**Mark
Rathbone**

Digitally signed by Mark Rathbone
DN: cn=Mark Rathbone, o=North-
West University, ou=Business
management,
email=mark.rathbone@nwu.ac.za,
c=ZA
Date: 2023.04.27 12:41:37 +02'00'

Prof Mark Rathbone
Chairperson: NWU Economic and Management Sciences Research Ethics Committee

ANNEXURE E: CONFIRMATION OF PROFESSIONAL EDITING



Blue Diamonds Professional Editing Services (Pty) Ltd

Polishing your brilliance

Email: jacquibaumgardt@gmail.com

Website: www.jaybe9.wixsite.com/bluediamondsediting

26 November 2023

Declaration of editing

Investigating the influence of academic staff's resistance to change regarding technology readiness:

The mediating role of technology self-efficacy

by

Ronel Fourie

I declare that I have edited and proofread this report. My involvement was restricted to language usage and spelling, completeness and consistency and referencing style. I did no structural re-writing of the content.

I am qualified to have done such editing, being in possession of a Bachelor's degree with a major in English, having taught English to matriculation, and having a Certificate in Copy Editing from the University of Cape Town. I have edited more than 500 Masters and Doctoral theses, as well as articles, books and reports.

As the copy editor, I am not responsible for detecting, or removing, passages in the document that closely resemble other texts and could thus be viewed as plagiarism. I am not accountable for any changes made to this document by the author or any other party subsequent to the date of this declaration.

Sincerely,

Dr J Baumgardt

UNISA: D. Ed. Education Management

University of Cape Town: Certificate in Copy Editing

University of Cape Town: Certificate in Corporate Coaching



Jacqui Baumgardt
Member
Member since March 2023 to February 2024
www.bluediamondsediting.com



Blue Diamonds Professional Services (Pty) Ltd (Registration Number 2014/092365/07)

Sole Director: J Baumgardt

ANNEXURE F: CONFIRMATION OF TECHNICAL EDITING



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Potchefstroom

2531

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Phone: 0834755363

November 2023

TO WHOM IT MAY CONCERN

I hereby declare that the thesis titled:

**Investigating the influence of academic
staff's resistance to change regarding
technology readiness: The mediating role of
technology self-efficacy**

by

R Fourie

33366462

has been technically edited by myself, including all tables and figures and the layout of the document's contents.

E Oosthuizen

ANNEXURE G: TURNITIN REPORT



Faculty of Economic and Management Sciences

DECLARATION WITH REGARDS TO SIMILARITY REPORT

Turnitin (TII) is the plagiarism- prevention service of choice for the North-West University. A thesis/dissertation/mini-dissertation/article is submitted to the TII website, to be checked for similarities in the document by comparing submitted papers to several databases/repositories on the World Wide Web. It is important to note that TII does NOT identify plagiarism – only similarities. The aim is to draw students' attention to these similarities so that they improve their academic writing style and reporting of sources before submission for examination.

The undersigned declares that the thesis/dissertation/mini-dissertation/article with the title mentioned below, was submitted, assessed and that the issues (if any) have been addressed, and that a satisfactory report has been obtained.

Investigating the influence of academic staffs resistance to change regarding technology readiness: The mediating role of technology self-efficacy

Title of dissertation/mini-dissertation/thesis

R Fourie

Prof PA Botha

Student (Initials and surname)

Supervisor/Promoter (Initials and surname)

11689323 – MASTER OF BUSINESS ADMINISTRATION (5BE Q01)

Student number and degree

Declaration with regards to similarity report
File reference: 7.1.11.3.5

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