The adoption of Insurance Technology solutions by customers in South Africa

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ABSTRACT

This research study investigated factors driving customer adoption of Insurance Technology solutions or InsurTech in the insurance industry and what insurers should do to ensure positive acceptance of Insurance Technology by customers in South Africa.

The research used the Unified Theory of Acceptance and Use of Technology (UTAUT) model. This study is essential as incumbent insurance and InsurTech companies have been investing in Insurance Technology solutions to offer affordable insurance solutions at lower operating costs; however, adoption of these technologies by customers remained low.

The study used a quantitative methodology and an online questionnaire with 37 questions following the UTAUT model to collect data. This research study focussed on insurance and non-insurance customers in South Africa. A broker and an InsurTech company distributed the survey amongst insurance clients. The respondents were also derived from LinkedIn and the referrals by the network of the researchers. A total of 213 respondents attempted the online survey, although some still needed to complete the entire survey, which led to differing totals against different constructs. In addition, the construct scores were calculated for items with a missing value of less than 50% of the inferential statistics.

As a result of the missing values, the sums for the various structures varied. According to the research study's findings, consumers' behavioural intention to utilize Insurance Technology solutions is significantly predicted by two main variables: performance expectancy and effort expectancy. Furthermore, general awareness and understanding, attitude, and trust where highlighted as important predictors. The study's findings highlighted several factors that prevent insurance technology adoption, including a lack of product and technology information, mobile data, internet security, and awareness. The study also found that easily accessible information, accessible technology, and ease-of-use were enablers of Insurance Technology

solutions adoption by customers. The study provides more insights into what insurance companies need to focus on to increase customers' adoption and use of Insurance Technology solutions. The study contributes to the body of knowledge and future studies on factors influencing the adoption of customers' adoption of Insurance Technology solutions

KEYWORDS
Digital adoption, digital platforms, insurance industry, InsurTech, insurance products, UTAUT

DECLARATION

I, Gift Sipho Sibanda, hereby declare that this research project report is my own work except as indicated in references. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business at the University of the Witwatersrand, Johannesburg. It has not been previously submitted for any degree or examination in this or any other university.

Name: Gift Sipho Sibanda Signature

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Signed at Johannesburg.
On the 28th day of February 2023

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LIST OF ACRONYMS

Abbreviation	Description
BI	Behavioural intent
CEO	Chief Executive Officer
CI	Consumer Innovation
COVID	Coronavirus
EFA	Exploratory Factor Analysis
EY	Ernest & Young
GDP	Gross Domestic Product
IBM	International Business Machines
IS	Information Systems
IT	Information Technology
ITIF	Information Technology and Innovation Foundation
PBC	Perceived Behavioural Control
PEOU	Perceived Ease-of-use
POPIA	Protection of Personal Information Act
SPSS	Statistics Package for the Social Sciences
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
TV	Television
UK	United Kingdom
US	United States
UTAUT	Unified Theory of Acceptance and Use of Technology
UTAUT2	Unified Theory of Acceptance and Use of Technology 2

CHAPTER 1. INTRODUCTION

1.1 Statement of purpose

Advancing digitisation has presented the insurance industry with a paradigm shift, and the pace of change has accelerated owing to an increase in the volume of electronic data, the ubiquity of mobile interfaces and the growing power of artificial intelligence (Catlin et al., 2018). Further, society's increasing dependence on digital technologies is also changing customer expectations and redefining industry boundaries. Insurers cannot avoid this phenomenon. With the refinement of traditional industry boundaries, the future of insurance will be heavily influenced by technological changes, hence it becomes important to understand factors that influence clients to use available insurance technologies to buy insurance. This quantitative study will investigate factors that influence the adoption of Insurance Technology solutions (InsurTech) by customers.

1.2 Background of the study

The fourth industrial revolution in insurance was brought about by the introduction of sophisticated software programs and the automation of machinery in the operating environment. (Nicoletti, 2021). The fourth industrial revolution consists not only of intelligent and networked machines and systems; it has a much broader scope. Nicoletti (2021) mentioned that there are waves of other breakthroughs in areas ranging from cell phones to nanotechnology, from renewable energy to advanced sensors. According to Nicoletti (2021), the merging of these technologies, as well as their interaction at a physical, biological and digital level, creates a fourth historic period that differs from previous revolutions. The insurance industry is not spared in this revolution. In comparison to other businesses, the insurance operating model has been slower to innovate over the years owing to resistance to embracing technology. (Riemer et al., 2017). According to Riemer et al. (2017), offering conventional

insurance products through digital channels like mobile, online, or apps is referred to as digital distribution.

While insurers were the first to use technology, traditional underinvestment in it has led to significant inefficiencies in the insurance ecosystem, forcing a new generation of players to solve those inefficiencies. In addition, insurers have historically been slow to adopt new technologies. (Riemer et al., 2017). Typically, established companies are hampered by their outdated legacy business architecture and infrastructure, affecting their ability to respond with agility to changing consumer needs. (Catlin et al., 2018). Riemer et al. (2017) argue that the issue has been compounded by the way that digital transformation has allowed businesses from other sectors, like retail, the banking sector, and predominantly technology companies, to enter the traditional insurance market previously controlled by incumbents, thereby compelling the latter to step up their innovation efforts.

With the advent of digitisation, accessibility is essential to the customer experience. A revolution in consumer behaviour has transformed industries. The introduction of new technologies forced incumbent companies to adapt their organisations, paving the way for a tech-savvy generation of new entrants. A new wave of short-term insurers started entering the InsurTech market in 2017 and 2018, creating a competitive atmosphere in which traditional insurers started making use of technology to improve their efficiency, speed, and service quality to stay relevant in the market (Genesis, 2019). Patterns of digitization, such as the development of internet accessibility, have additionally created new tools to improve innovative advertising methods for the insurance business (Dash & Chakraborty, 2021).

South Africa has a gross annual insurance premiums market of over $47 billion, which accounts for 70% of the African continent's insurance business, which sits at $68 billion in annual gross written premiums. A new generation of players (the aforementioned InsurTechs) has entered various segments of the insurance value chain using enabling technology, taking advantage of the slow rate of innovation among the incumbents (Riemer et al., 2017). A combination of the digital environment,

big data analytics as well as technological and cognitive-emotional factors have become central drivers of the modern insurance concept (Baranauskas & Raišienė, 2021). According to Genesis (2019), the South African InsurTech sector has a wide range of participants, from established providers with online channels for product distribution to newcomers with business operating models that are more innovative. Genesis (2019) found that in 2019, South Africa had 22 InsurTech firms, most of whom are digital distributors of insurance products. Furthermore, Genesis (2019) stated that incumbents are digitizing their processes to keep up with technology advancements as a way of responding to these new competitors. Unlike existing insurers, InsurTechs are not constrained by the burden of strong government regulations and benefit from flexible systems with no legacy burdens (Lee & Shin, 2018).

In 2019, Genesis mentioned that today's customers are expecting new, modern-edge technology solutions from their insurance service providers, however, it has been found that low volumes of personal insurance have been sold through digital channels that eliminate any human involvement. Furthermore, interesting customer dynamics exist within the market: only 28% of South African millennials are active in the insurance market, and 60% of them prefer to communicate with their insurers over the internet (Kene-Okafor, 2021). According to Kene-Okafor (2021), online automation has the potential to reduce claims processing costs for insurers by 30%. The items raised by both Genesis (2019) and Kene-Okafor (2021) both highlight the importance of increasing the adoption of Insurance Technology solutions by customers, and that understanding the factors driving adoption should be prioritised.

For insurance companies to remain relevant, they need to move to a more digital environment while ensuring that they develop or acquire solutions that will be easily embraced by new and potential customers. This quantitative study will be important from a South African context for insurance companies and InsurTechs to understand what they need to do to get customers to adopt Insurance Technology solutions. South Africa is seen as one of the most unequal countries in the world, and understanding the factors that influence clients' decisions in acquiring insurance products online and through other digital platforms or InsurTech will assist in future studies that are meant

to drive financial inclusion. This study will further give insights to insurance companies that are selling or looking to sell insurance products through digital platforms as well as managing their clients using Insurance Technology solutions.

1.3 Research problem

In 2017, Catlin et al. stated that the risks that InsurTech companies pose to traditional insurance business models are real, as digital innovations relentlessly redefine the next generation of insurance ecosystems (Catlin et al., 2017). Established companies have to adapt or lose market share, and in particular, they have to deal with the much higher level of customer retention that InsurTechs are achieving (Catlin et al., 2017). According to Catlin et al. (2017), the shift to digital adoption brings benefits in many areas of operations, resulting in cost savings, better capital allocation and higher revenue generation. InsurTech companies are progressing through the creation of new business models in the insurance industry that leverage technology innovations that enable data collection and analytics (VanderLinden et al., 2018). According to VanderLinden et al. (2018), InsurTech companies are leveraging data analytics-driven technologies to develop well-tailored, hassle-free and affordable products that are distributed through cheaper channels, thereby reducing their operational costs.

Genesis (2019) says that the adoption of insurance in South Africa is low, accounting for 12.6% of GDP in 2017 and declining, owing to the country's tough economic climate and decreased discretionary spending by consumers. Yet this low adoption is also witnessed globally, as stated by Simon (2019), who said that whilst there are advancements in insurance technologies, there are still persistently low penetration levels. This is mainly driven by expensive products and an intermediated distribution model that still dominates the market.

Genesis (2019) suggests that new insurance business models that can reduce operating costs and offer lower insurance premiums have the potential to thrive. Around 37% of South African customers already use their mobile phones or computers to browse and identify potential insurance policies, although converting browsing into

a purchase remains a challenge (EY, 2019). Genesis (2019) states that South African insurance customers have higher digital awareness at 41% versus 38% in other developed markets such as the UK, but the adoption of InsurTech is still low. This challenge has created a need for insurance companies to find solutions to attract customers.

This then leads to the research problem. *The problem is that both incumbent insurance and InsurTech companies have been investing in Insurance Technology solutions to offer affordable insurance solutions at lower operating costs, however, adoption of these technologies by customers remains low.*

To this end, insurance companies must find solutions that will lead to customers adopting Insurance Technology solutions (InsurTech). Once a significant number of customers start adopting these Insurance Technology solutions, they will be able to access affordable insurance solutions, while companies will be able to lower their operating costs while realising a return on investment. To achieve this, insurance companies need to understand the factors that drive the adoption of Insurance Technology solutions as well as the barriers that deter the adoption of insurance technologies. This paper aims to understand the factors that drive the adoption of InsurTech by customers through the application of the technology adoption models like the Unified Theory of Acceptance and Use of Technology (UTAUT).

This quantitative research study intends to provide insights into the factors driving customer adoption of digital insurance platforms or InsurTech in the insurance industry and what insurers should do to ensure positive acceptance of Insurance Technology by customers in South Africa.

1.4 Research Objectives

RO1. To investigate factors that drive InsurTech adoption by customers using the Unified Theory of Acceptance and Use of Technology (UTAUT).

RO2. Identify how these factors are affected by age, gender, experience, and voluntary use by InsurTech customers in South Africa.

RO3. To investigate the barriers to adoption of InsurTech by customers in South Africa.

RO4. Investigating the potential preconditions or enablers of InsurTech adoption by insurance customers in South Africa.

1.5 Rationale

The rationale of this study is to contribute to and complement previous research studies done on Insurance Technology adoption to potentially stimulate new discussion points generated by innovations in the InsurTech space, including the impact on existing insurance business models and the challenges faced by insurance companies. This study aims to add value to the insurance sector by examining the factors contributing to customer adoption of InsurTech or digital platforms and recommending potential business models and approaches to drive business growth through InsurTech. This study is designed to help insurance companies better understand what changes or improvements are needed for customers to adopt the technology solutions they provide, while simultaneously reducing operational and distribution costs. The importance of conducting this study is to help insurance companies effectively implement successful InsurTech operating models to ensure there is a return on investment in the capital contribution entailed in setting up InsurTech in their businesses.

1.6 Delimitations of the study

i. The scope of the research focuses on examining factors influencing the adoption of InsurTech by customers on a Business to Customer basis and not Business to Business.
ii. This study is limited to the insurance industry and does not include parallel sectors in the industry.

iii. This study excludes insurance companies such as investment trusts and focuses primarily on risk-based insurance.
iv. This study will exclude business insurance.
v. This study excludes the sectors of the population that are under the age of 18 and over the age of 75.
vi. This study is limited to the South African market, although some of the literature reviewed may refer to other markets.
vii. This study excludes aggregators within the insurance industry.

1.7 Definition of terms

Table 1.7:1 Definition of Terms

Terms	Definitions
Digital adoption	Refers to reaching a state where all digital tools and resources are being used to their full potential (Author, 2022).
Digital platforms	Online businesses that enable commercial interactions between at least two different groups, typically one being suppliers and the other consumers (ITIF, 2018).
Distribution channel	The tools, means and people through which product marketing, awareness and sales are conducted by insurance companies (Waseem-Ul-Hameed et al., 2017).
Insurance product	Contract represented by a policy that provides the buyer with financial protection or compensation from an insurance company (Ferreira, 2021)
InsurTech	InsurTech is defined as an ecosystem of focused, innovative companies (mostly start-ups) that are creating value through disruption and problem-solving across the insurance business value chain by bringing insurance solutions and technology to offer simple and customer-centric solutions (VanderLinden et al., 2018).
Unified Theory of Acceptance	A technology acceptance model with five constructs: perceived utility, extrinsic motivation, job fit, relative advantage, and outcome

and Use of Technology (UTAUT).	expectations. These form the expectancy of performance in the UTAUT model, while the expectancy of effort captures the notions of perceived ease-of-use and complexity (Venkatesh et al., 2003).

1.8 Assumptions

The initial assumptions in this study include:

a. The selected population will understand the questions included in the study being conducted to understand factors influencing InsurTech adoption by customers.
b. Having a broad population will give a holistic view of the factors being investigated by this study.
c. InsurTech will play an important role in the development of new business models in the insurance industry and therefore this study is likely to contribute towards improving business models in this sector (Cappiello, 2020).
d. The different demographics will likely influence the outcome of the research.

1.9 Chapter Outline

Table 1.9:1 Chapter Outline

Chapter	Content
Chapter 1 Introduction	This chapter of the study introduces the research topic, insurance and InsurTech industry background, use of technology, explains the research problem, research questions as well the rationale of the study plus the scope of the study.
Chapter 2 Literature Review	This chapter reviews the literature identifying the factors influencing the adoption of digital technologies in the insurance industry, barriers to technology adoption as well as the theoretical model for technology adoption.
Chapter 3 Research Methodology	This chapter covers the research methodology, research design, data collection methods, population sample and population, paving the way to understanding the adoption of digital technologies in the insurance industry.
Chapter 4 Results and Findings	This chapter covers the finding from the survey data analysis
Chapter 5 Results discussion and conclusions	This chapter covers the discussion of the findings from the survey data analysis including a comparison to findings covered in Chapter 2's literature review.

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This section provides a literature review of the key issues relevant to this study. The first section is a high-level InsurTech background and the four technology adoption models that can be used. The second section discusses the factors driving Insurance Technology adoption by customers in the insurance industry. The third section presents previous studies on barriers to technology adoption in the InsurTech – and potentially FinTech – space by customers. The fourth section examines the user acceptance model called the Unified Theory of Acceptance and Use of Technology (UTAUT). The last section of Chapter 2 concludes with an overview of the literature research.

2.2 Definition of topic or background discussion

2.2.1 InsurTech

Insurance Technology, or InsurTech, is a rapidly growing industry that is beginning to disrupt traditional insurance delivery in both developed and emerging markets, thereby creating new opportunities as well as challenges for established incumbent insurance companies, start-ups, and investors (Holliday, 2019). In addition, Holliday (2019) states that the opportunities provided by InsurTech are especially important in emerging markets, where there is a large coverage gap caused by low insurance penetration, which has significant implications because economic growth and insurance penetration are inextricably linked. According to Holliday (2019), to close the protection gap in these markets, technology and new business models are required, and insurance companies should be able to innovate internally through partnerships with other companies, alternatively seizing opportunities through investment.

In 2018, Vanderlinden defined InsurTech as an ecosystem of focused, innovative companies (mostly start-ups) that are creating value through disruption and problem-solving across the insurance business value chain by bringing insurance solutions and technology together to offer simple and customer-centric solutions.

InsurTech can also be described as an insurance company, intermediary or segment specialist of the insurance value chain that uses technology to either compete or add value to the insurance sector (Braun & Schreiber, 2017).

InsurTech refers to the use of technological innovations aimed at squeezing savings and efficiencies out of the current insurance industry model and is a combination of the words insurance and technology, inspired by the term FinTech (Mirza et al., 2021). According to Mirza et al., (2021) InsurTech is exploring avenues that large insurance companies have less incentive to use, such as: offering ultra-customized policies, and social security, and leveraging new data streams from connected devices to dynamically priced premiums based on observed behaviour.

According to Xiao (2017), InsurTech is an important role player in improving insurance ecosystems and overcoming common pain points in the industry and defines InsurTech as the application of emerging technologies such as big data, blockchain and artificial intelligence in the design, pricing, marketing and claims of insurance products.

2.3 Technology adoption foundation

With the continued and dynamic growth of technology, the rate of adoption of these technologies will depend on several factors, such as convenience, consumer needs, security and availability of technology. This section presents the technology adoption models that can be used to drive the adoption of Insurance Technology.

2.3.1 *Theory of Reasonable Action (TRA)*

One of the most widely-used theories is the Theory of Reasonable Action, which is about factors that determine human behaviour based on intention. (Fishbein & Ajzen, 1977). Furthermore, Fishbein and Ajzen (1977) defined attitude as an individual's evaluation of an object, belief as a connection between an object and an attribute, and behaviour as an outcome or intention. Attitudes are affective in nature and are founded on a set of beliefs about the object of behaviour (e.g., a credit card is convenient). The person's subjective norms, i.e., how they perceive their immediate community's attitude toward a particular behaviour, are a secondary factor (e.g., my co-workers use credit cards, and it conveys status to have one).

2.3.2 *Technology Acceptance Model (TAM)*

According to Davis (1989), TAM argues that user perceptions of the technology's usability and ease-of-use are the two main determinants of technology adoption. The degree to which the user feels that utilizing the system would improve their performance at work is taken into account by perceived usefulness (Davis, 1989). As a result, the perceived ease-of-use attribute describes how easily a user can utilize a system with little to no additional effort. TAM is a widely recognized theoretical model for understanding IT adoption and usage processes. This explains a large portion of the variation in user behavioural intent (BI) associated with the adoption and use of IT in various contexts (Hong et al., 2006). According to Hong et al. (2006) TAM is a model that is advocated for being an intention-based model and states that intention to use or adopt technology is a good predictor of its actual use. From this, it can be concluded that the TAM model has a significant theoretical and conceptual impact on technology acceptance.

The TAM depends on the main hypothesis of the theory of reasoned action (TRA), which discusses how a person intends to be engaged in a particular behaviour that is determined by cognitive factors.

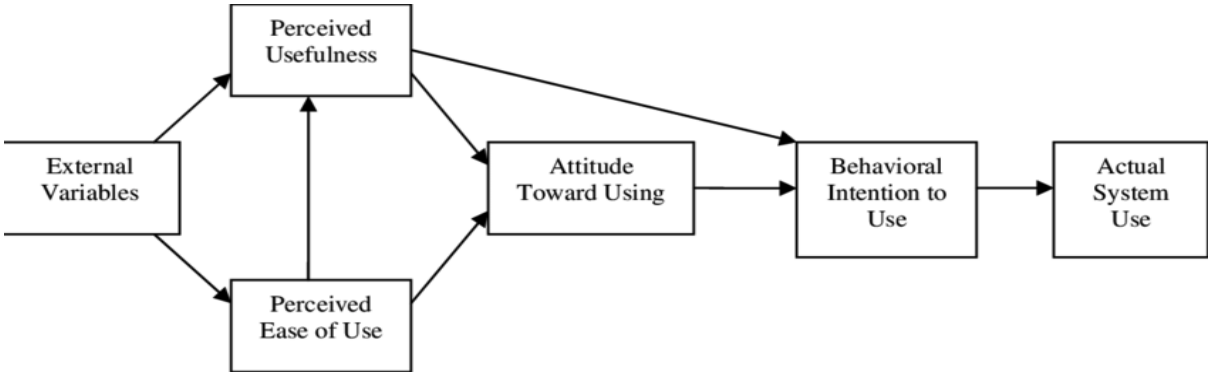

Figure 2.3:1 Technology Acceptance Model

(Davis, 1989)

1) **Attitude:** refers to the feelings (whether positive or negative) and/or evaluations that a person experiences when using new technologies. The behavioural intention is higher comparatively when an individual's attitude towards using new technology is higher. This is influenced by both perceived ease-of-use and perceived usefulness.
2) **Perceived usefulness** is the extent to which an individual thinks and believes that utilizing a specific method will improve his or her ability to accomplish their job. If a user believes the new technology will be beneficial, they will view it favourably.
3) **Perceived ease-of-use** is the extent to which a person thinks utilizing new technology is simple. Users are more likely to adopt a new technology if they believe it is simple to use and takes little effort or time.
4) **Behavioural intentions**: an extent to which a user's level of openness to using new technologies.
5) **External variables**: These variables, which include system characteristics, environmental variables, and user-specific variables, have an indirect impact on behaviour.

6) When making use of new technologies, behaviour is influenced by perceived usefulness and perceived ease-of-use and these are influenced by external factors or variables such as individual qualities, system attributes and organisational support.

2.3.3 *Theory of Planned Behaviour (TPB)*

According to Ajzen (1991), the theory of planned behaviour (TPB) expands upon TRA by adding a third component known as perceived behavioural control. In addition to the subject's attitude and subjective standards, the user would score how easy or difficult they thought the behaviour was to do (Ajzen, 1991). Each person's perceptions will vary depending on the work at hand and the context in which they are made. The theory assessed the factors around attitude, perceived behavioural control, subjective norms and intentions regarding actual behaviour. While TRA purely focused on voluntary situations, this theory focused on obligatory situations. (Sharma & Chandel, 2013). According to Ajzen (1991), PBC is conceptualized as a function of resources, opportunities and skills to achieve an outcome, that is closely related to belief in effectiveness. PBC is referred to as being the perception of external and internal behavioural constraints.

2.3.4 *Unified Theory of Acceptance and Use of Technology (UTAUT)*

UTAUT was created to identify the elements affecting how organizations embrace technology (Venkatesh et al., 2003). The Reasoned Action Theory (TRA), Technology Acceptance Model (TAM), Motivation Model, Planned Behaviour Theory (TPB), Combined TAM and TPB -Model of PC Use, Social-Cognitive Theory, and Innovation Diffusion Theory were the eight IT acceptance frameworks that were combined to produce the model. According to Venkatesh et al(2003), there are four elements that govern technology use; facilitating conditions, the expectancy of achievement, social influence and expectancy of effort. Moderating factors, such as age, experience, gender, and voluntary usage, have an impact on all of these variables.

2.3.5 *Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)*

Venkatesh et al. (2012) expanded the UTAUT model to the consumer environment with three additional constructs: hedonic motivation, pricing value, and habit, which stresses consumers' hedonic value (intrinsic motivation), to develop UTAUT2. This is consistent with emerging technology users (Venkatesh et al., 2012).

- **Hedonic motivation** is referred to as the fun or satisfaction obtained from using technology, is a crucial element in determining customer acceptability and usage. It switched the emphasis from users' extrinsic incentive within an organization to consumer technologies' intrinsic drive.

- **Price value** is a positive predictor of consumer behavioural intent to use technology in UTAUT2, such that the perceived benefits of using a technology are greater than the perceived financial costs of using that technology. In contrast to employees, for whom the cost of the system is carried by the company, price value is considered as an effective motivator for individual customers, since cost reductions are directly tied to individual savings by the consumer.
- **Experience and habit:** Experience refers to a time-based exposure to technology, which results in an individual being familiar with its use. Habit refers to the extent to which people tend to perform behaviours automatically because of learning.

2.4 Prior Studies on InsurTech

The section reviews previous studies conducted by other researchers to understand the factors that drove customer adoption or acceptance of technologies.

2.4.1 Factors driving adoption of InsurTech

In 2014, a study on the adoption and use of online portals by authorized users in the health and insurance space to understand factors that influence the adoption of health insurance online portals by performed Cadenhead. The study investigated how UTUAT could assist to understand the relationship between the users' intention to accept the use of health insurance online portals and applications. The research study was conducted by distributing a survey to participants from health insurance through social media platforms. The study results showed that effort expectancy and social influence were variables in influencing the users' adoption of health insurance online portals. The study results also concluded that both facilitating conditions and

performance expectancy and had no influence on the users' behavioural intention to adopt and use secure online portals (Cadenhead, 2014).

Baptista & Oliveira, 2015 mentioned that the communication advancement, mobile technologies, and the emergency of intelligent devices had accelerated the need for mobile banking solutions in the banking sector, and users of online banking solutions. In other developing countries, especially in the African continent, online banking can contribute in overcoming financial exclusion and physical distance by allowing the local population to conduct financial transactions (Baptista & Oliveira, 2015). However, adoption studies in Africa are scarce, thereby leaving unexplored areas of research. Baptista & Oliveira, 2015 states that the research advanced the body of knowledge in the online and digital banking space by proposing the adoption of innovative and theoretical models that combine the UTAUT2 model of Venkatesh, Thong, and Xu (2012) with alternate moderators that provide other insights on factors influencing the adoption of online banking include the influence of culture on users' behavioural intention. According to Baptista & Oliveira, 2015, the model was assessed through structural equation modelling (SEM) using a quantitative research study that was conducted in Africa thereby cementing the data and knowledge available. Performance expectancy, habit and hedonic motivation were the most significant on behavioural intent. To explain mobile and online banking usage behaviour, the most critical drivers were culture and habit moderator influence on behavioural intention. The most significant cultural moderators were collectivism, uncertainty avoidance, and short-term, and power distance (Baptista & Oliveira, 2015).

Gowanit et al. (2016) conducted research to examine the introduction of a mobile insurance claims system (M-Insurance) and developed a framework for consumer acceptance of M-Insurance. This study indicated that external (social) factors influence consumers' attitudes and behaviours associated with their intention to purchase M-insurance. The external factors include preference for a personal service; confidence in insurer's claim acceptance; and the risk of claims knowledge, which could cause legal problems, among other things (Gowanit et al., 2016).

In order to better understand employee acceptance of a new technology intended to increase utilization of the policy processing system, Legowo performed a research in 2018. The fundamental model employed was the UTAUT extended technique, with vendor support and management effectiveness included as additional variables. Legowo (2018) states that this model employed behaviour variables (UTAUT method), management effectiveness, and vendor support in addition to performance expectancy, effort expectancy, facilitating conditions, social beliefs, and behaviour intention. Understanding the effects of performance expectations, effort expectations, management effectiveness, and social influence factors on behaviour intention to utilize policy processing systems was the goal of this research project. Additional goals included determining whether vendor support, facilitating conditions, and behaviour intention factors in policy processing systems affect user behavioural intention. Via the use of survey questionnaires, the data was gathered. 180 people throughout the underwriting, marketing, and reinsurance departments used this system. The research data was analysed through the SmartPLS2 software. The results showed that social influence was a significant variable that influenced behavioural intention, while management effectiveness did not have an influence. The results also showed Performance expectancy and effort expectancy had an influence in behavioural intent. The study results also showed that facilitating conditions, and vendor support had an influenced on users' behavioural intent (Legowo, 2018).

In 2011 (Gidhagen & Persson), conducted a study to develop a conceptual model to elucidate insurance customers' intentions to use the web as a channel of communication and interaction with insurance companies. This study found that by emphasising the internet, customer- and account-related factors will influence factors pertaining to customer trust and attitude towards the organisation. (Gidhagen & Persson, 2011).

In 2017, Wildenbos et al. conducted a research study to determine facilitators and barriers that influence older patients to adopt patient portals. The study used the UTAUT model to analyse factors influencing older patients to adopt and use patient

portals. The study found the enablers to be performance expectancy and voluntariness of use related to higher education and experience (Wildenbos et al., 2017).
Gebert-Persson (2019) also conducted research to develop a theoretical framework that explains the online insurance claims adoption, which consisted of infrequent interactions, complexity and risk. The study also extended to adapt the Technology Acceptance Model in order to incorporate knowledge and trust- related beliefs. This study alluded to previous studies within the financial services space that have shown that trust is as important or potentially more important in comparison to perceived usefulness and ease of use in shaping attitudes toward acceptance of online insurance applications (Gebert-Persson et al., 2019). However, Gebert-Persson's (2019) study showed a weak connection between an intention to use an online tool and a trusting attitude. Gerbert-Persson et al. (2019) further states that trust has a certain meaning; although perceived ease of use, perceived utility as well as technology attitude are ranked higher when it comes to online insurance claim applications. According to Gebert-Persson et al. (2019), the findings may also point to an emerging trend in which trust in the internet channel as a whole is becoming less important. According to Gebert-Persson et al. (2019), both the internet and product knowledge were not as important to intent formation in comparison to ease of use and usefulness.

Tian et al. (2020) conducted a study examining the acceptance and use of insurance telematics technology in the new generation of millennials, presenting both a challenge and an opportunity for insurers. This research study indicated that trust and perceived risk were direct precursors to purchase intent of online life insurance, suggesting that one of the important aspect of the online life insurance buying process is removing any uncertainties. Even though trust is a direct precursor to the online life insurance purchasing intent, through perceived risk it acts as an indirect precursor (Tian et al., 2020). The results also highlighted that benefit expectations had a higher impact on the customer’s intention to buy life insurance online. Furthermore, Tian et al. (2020) states that the perceived user-friendliness of younger generations influences behavioural attitudes only indirectly via the perceived usefulness of insurance telematics. This suggested an evolutionary shift in millennials' preferences in adopting and using this technology, from a purely functional evaluation to more sophisticated

applicability sought in real work and life scenarios. Tian et al. (2020) mentions that it has been found that perceived happiness influences consumption intention rather than attitudinal formation, and thus acts as a trigger rather than a shaper, further reflecting its critical role and contribution to determining general applicability for millennials. The Tian et al. (2020) study also showed that trust emerges as a critical factor influencing both behavioural attitudes and usage intention among millennials.

Das and Das (2020) conducted a study examining if there is relationship between demographic profiles, FinTech service acceptance, perceptions, user patterns and the limitations faced by customers when using FinTech solutions. The study results that were based on a survey which had 215 respondents, showed a significant correlation between the use of FinTech solutions and the demographic profiles (Das & Das, 2020). According to Das and Das (2020) awareness and usage of such services is more likely to be found among millennials and Gen Z than Gen X and Baby Boomers.

According to Phillippi et al., 2021, a study on the acceptance of internet and mobile-based interventions that complement health care was conducted amongst patients and health professionals. The study validated and adapted the Unified Theory of Acceptance and Use of Technology (UTAUT) for telemedicine. The study assessed all the variables like Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Behavioural intention, and age, gender, experience in the use of internet technology etc. The primary research data was sourced and analysed for model validation through a structural equation modelling. The results showed that Performance Expectancy was the strongest predictor. The study results also highlighted that age, gender and experience had no moderating effects (Phillippi et al., 2021).

In 2021, Mandina and Matsika conducted a study aimed at examining the willingness of customers to adopt self-service (digital) life insurance products. The study found that there was a significant linear positive association between consumer optimism and intention to use, and consumer innovation and intention to use (Mandina & Matsika, 2021). Mandina and Matsika (2021) state that it has thus been found that

increased investment in consumer optimism and innovativeness drives consumer intent.

Gharahkhani and Pourhashemi (2020) conducted a study with the aim of examining how the determinants (attitude towards use, ease of use, perceived usefulness, privacy policy and privacy risk) might influence intention to use mobile Insurance Technology, with a particular focus on whether gender had moderating. This study finds that the quality dimensions of cell phone insurance and usage preference, ease of use, perceived usefulness, and privacy policies had positive effects on usage intent (Gharahkhani & Pourhashemi, 2020). According to Gharahkhani and Pourhashemi (2020) ease of use, privacy policy and attitude towards use are the most important determinants influencing people's intention to use mobile insurance.

A study was conducted with the aim of closing the research gap by investigating the Internet of Things (IoT) adoption in telemedicine or eHealthcare with focus to get a customers' perspective (Arfi et al., 2021). The study was conducted in France and comprised of a randomly selected sample totalling 268 potential IoT users. The research study results that were derived through structural modelling revealed cost of using IoT in Telemedicine is a significant barrier to adoption. According to Arfi et al., 2021, age was a significant moderator of customers' intent to adopt and use IoT in Telemedicine or eHealthcare.

Ali et al. (2021) conducted a duplicate study; firstly, this study aimed to examine the determinants of the perceived benefit and risk of Islamic FinTech, secondly, this study examined the impact of perceived benefit, perceived risk and user trust on intent to adopt Islamic FinTech. The study showed a strong positive and significant relationship between trust and intent to adopt Islamic FinTech (Ali et al., 2021).

In 2022, Dissanayake et al. conducted a study that combined the Unified Theory of Acceptance and Use of Technology (UTAUT) and Task-Technology Fit (TTF) models to build and empirically test a model that would explain how customers embrace HWDs. Based on approved measuring scales, a self-administered questionnaire was created. Structured partial least squares modelling examined data from 406 valid

samples. According to the findings, factors that positively influenced consumers' behavioural intention to use wearable health devices included performance expectancy, effort expectancy, facilitating conditions, social influence, and task-technology fit. These factors together accounted for 68.0% of the variance in that behaviour. Due to the mediating effects of task-technology fit and effort expectancy, task and technology features were essential factors in determining task-technology fit. These factors also had an impact on behavioural intention.(Dissanayake et al., 2022)

Slazus (2022) conducted a customized mixed-methods approach study with the objective of identifying enablers and barriers influencing consumers in adopting or rejecting mobile and online banking. This research study was previously conducted through interviews with seven respondents. Slazus (2022), then developed a quantitative questionnaire using the tested factors and results that were identified in the literature. The research study data was analysed through the exploratory factor analysis (EFA) after a sample of 217 valid responses were collected. The EFA highlighted six influencing factors, four of which were enablers and two of which were barriers. According to Slazus (2022) utilities, socioeconomic influencers, trust in mobile devices, and youth were the supporting factors that positively influenced FinTech adoption.

Akinwale and Kyari (2022) conducted a study examining the factors influencing end-user attitudes and intentions to use FinTech solutions within the framework of Technology Adoption Model. This study was conducted amongst 467 users in Lagos State, Nigeria, through a structural equation model analysis. According to Akinwale and Kyari (2022), the research results showed that perceived ease of use, perceived usefulness, having trust in the service, and social influence had a positive and impact on users' attitudes towards the FinTech solutions. Akinwale and Kyari (2022) further stated that user attitudes towards FinTech solutions were influencing FinTech solutions adoption. The research study suggested that more is being invested in FinTech innovation and banks were raising awareness among the general public through social media, TV and radio stations (Akinwale & Kyari, 2022).

Hasan et al. (2021) conducted a study to identify the most important factors influencing the acceptance of mobile payments amongst Dutch customers. This research study initially addressed the concepts of customer experience and mobile payments, and then examined the Dutch banking and financial systems, prior to attempting to understand global research on mobile payments (Hasan et al., 2021). The study looked at the factors that influence mobile payments adoption and experience, as well as the impact of the COVID-19 outbreak on payment methods in the Netherlands due to social distancing rules. According to Hasan et al. (2021), the main factors influencing mobile payment adoption are perceived ease of use, usefulness, security, and trust. Mobile payment providers needed improve technical security and provide some form benefits to boost mobile payment businesses (Hasan et al., 2021)..

The effect of attitude regarding life insurers' adoption of mobile app services on customer satisfaction was investigated by Lee et al. in 2015. 538 Taiwanese respondents completed a questionnaire for the study (Lee et al., 2015). The results showed that all factors had a substantial and favourable impact on attitudes about usage. Yet, out of all of these characteristics, compatibility had the most impact. Customers' perceived utility and convenience of use favourably impacted customer happiness, stated Lee et al. (2015). The path analysis results also shown that the recognition of the indirect influence of compatibility on the use attitude was the second most important component for customer satisfaction, and that the usage attitude is the most important factor for customer contentment Lee et al., 2015).

The Technology Acceptance Model has also been adopted by Eltayeb and Dawson (2016) as the main theoretical framework to assess the adoption of personal cloud computing. According to the results, customers who opted for personal cloud computing were concerned about the cloud's usability, security issues, and convenience of use (Eltayeb & Dawson, 2016). Eltayeb & Dawson (2016) discovered that a technology's success is adversely affected by people's attitudes regarding the usage of technology. Eltayeb and Dawson (2016) add that despite the potential advantages of personal cloud computing, many users are hesitant to make the move due to privacy and security issues.

A study was conducted that aimed to examine the determinants influencing bank user acceptance of Islamic Financial Technology (FinTech) services by extending the Technology Acceptance Model in the Malaysian context (Shaikh et al., 2020). The results of the study show that the acceptance of Islamic FinTech services is determined by the perceived user-friendliness, the perceived usefulness and another variable, namely Consumer Innovation (CI). On the contrary, Shaihk et al. (2020) states that other factors, such as self-efficacy and subjective norms, do not affect the acceptance of Islamic FinTechs by Islamic banking users.

2.4.2 Barriers to technology adoption

In 2017, Wildenbos et al. conducted a research study to determine facilitators and barriers that influence older patients to adopt patient portals. The study used the UTAUT model to analyse factors influencing older patients to adopt and use patient portals. The barriers highlighted by the study included limited health literacy, poor facilitating conditions linked to limited technology access, lack of information and knowledge of patient portal existence (Wildenbos et al., 2017).

A study by Magotra et al. (2018) in India examined the connection between consumer value perceptions and behaviour related to technological acceptance. According to the study, consumers' opinions of the usefulness of the newest financial technologies are mostly influenced by their behavioural intents to acquire technology, then by their own attitudes about technology adoption (Magotra et al., 2018). Moreover, it has been discovered that customers' views of the benefits of adopting the most recent banking-influenced technological breakthroughs are increased by their belief in the utility of these innovations in satisfying their banking demands and by the simplicity of using them (Magotra et al., 2018).

In 2019, Rodríguez Cardona et al. carried out a mixed-methods analysis on the adoption and spread of chatbot technology in the German insurance industry. This study found that potential customers indicated they didn’t have enough knowledge on chatbot technology in order to make important and complex insurance decisions

without any human assistance (Rodríguez Cardona et al., 2019). According to Rodríguez Cardona et al. (2019) the study also found that age is factor when it comes to technology adoption, considering an ageing Germany population.

A study examining online life insurance purchase intent was conducted in China, and the results show that benefit expectations had a higher impact on the customers' intent to purchase life insurance using online channels (Jiang et al., 2019).

According to a study conducted by Slazus (2022), perceived risks and associated costs were the two impediments to technology adoption. Interestingly, 74% of the 217 respondents indicated they would join a bank with no branches and use their mobile phones or devices and internet to access banking services, there showing a positive propensity for mobile banking (Slazus, 2022).

Das and Das (2020) conducted a study in India aimed at the relationship between the different demographic profiles, FinTech solutions adoption, user pattern, perception, and the limitations faced by customers when using FinTech solutions. According to the findings, as FinTech companies have grown in popularity in the payments space, misunderstandings have been identified as a major barrier to the growth of technology-based services among respondents. (Das & Das, 2020).

Gharahkhani and Pourhashemi (2020) conducted a study to examine how the determinants (attitudes towards use, ease of use, perceived usefulness, privacy policy and privacy risk) might influence intention to use mobile Insurance Technology, with particular emphasis on the moderating effects of gender. The study found that perceived risk is the most important determinant of people's intention to use e-consultation and that privacy concerns emerged as a new and relevant obstacle in research, while privacy policies were less of a concern (Gharahkhani & Pourhashemi, 2020).

2.5 Analytical framework

2.5.1 *Theoretical Framework*

After studying previous models/theories, Venkatesh et al. (2003) formed the Unified Theory of Acceptance and Use of Technology (UTAUT). The UTAUT model's expectancy of performance comprises five related constructs: perceived utility, intrinsic motivation, job fit, relative advantage, and outcome expectations. In contrast, effort expectancy incorporates the concepts of perceived usability and complexity. (Venkatesh et al., 2003). The UTAUT has four predictors of user behavioural intent: performance expectancy; effort expectancy; social influence; and facilitating conditions as shown below:

- **Performance expectancy:** The degree to which a person believes that using the system will help him or her to progress in a job. This would include getting more tasks done, increasing productivity, making work easier to do, or improving the way you currently work (e.g., being able to get things done faster or with better quality). They will probably be intrinsically motivated to use technology if they believe it is assisting them in achieving objectives that go beyond the immediate task at hand.
- **Effort expectancy:** The ease with which the system is to be used. This emphasizes how difficult or simple it would be for a user to understand, operate, engage, and learn.
- **Social influence:** The degree to which an individual believes it is crucial that others think they should utilize the new system. a user's conviction that, because of important persons' observations, his or her usage of the system or technology would be improved. Mandatory compliance, such as fulfilling work in accordance with management expectations, or voluntary compliance because of social acceptance are other examples of social influence.
- **Facilitating conditions:** the degree to which one thinks that a system's technological and organizational foundation is in place to enable its usage. This involves considering the user's self-efficacy in using technology (i.e., his or her

level of comfort with the technology), the system's training and support, and the system's compatibility with the user's job responsibilities and working style.

The elements mentioned above are important components of the behavioural intent that leads to the usage of technology. Voluntariness of use, age, gender, and experience were discovered as moderating variables impacting the link between the components and behavioural intention or use of technology by UTAUT. Venkatesh et al. (2003) emphasised that moderating variables had the following effect:

a) The impact of **performance expectations** on behavioural intention is moderated by age and gender, therefore the impact will be higher in males, especially younger males.
b) The impact of **effort expectancy** on behavioural intention is moderated by age, experience, and gender, therefore the impact is higher for females, especially young females and at the commencement of the experience.
c) Age, experience, gender, and voluntariness all have a moderating effect on the impact of **social influence** on behavioural intention; as a result, the impact will be greater for women, particularly older women and in obligatory settings in the early phases of the experience.
d) Age and experience both moderate the effect of facilitating conditions on the impact of usage, making the effect for older employees stronger as experience

levels increase.

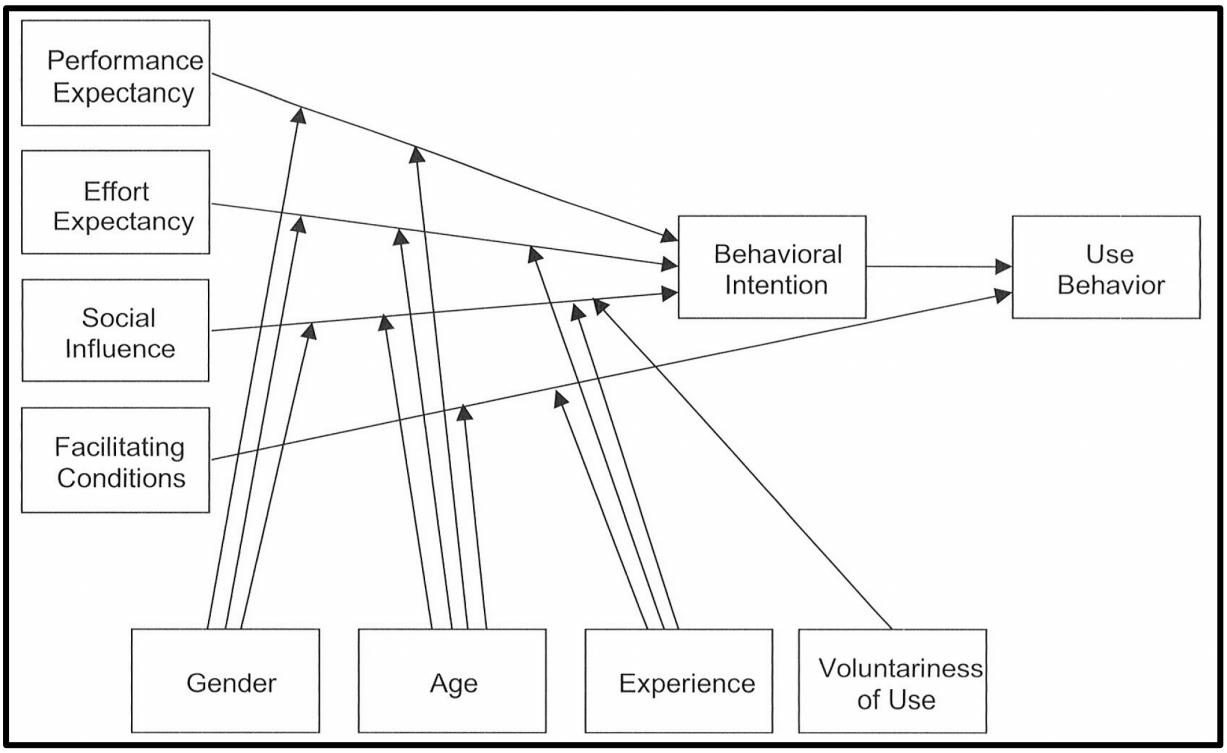

Figure 2.5:1 Unified Theory of Acceptance and Use of Technology (UTAUT)

(Venkatesh et al., 2003)

2.6 Conclusion of Literature Review

This chapter started off by defining the key terms for this study, it then proceeded to review literature on previous studies looking at technology adoption by insurance clients, with different researchers touching on the factors driving adoptions. It examined the various barriers to technology adoption in the insurance and financial services industries in general. The chapter proceeded to give a detail explanation of the UTAUT model.

The Unified Theory of Acceptance and Use of Technology is a model that is used to determine the factors influencing user acceptance of new technologies. The model takes into account the value that technology provides to users (expectations of performance), the simplicity with which it can be used (expectations of effort), the

organizational factors that facilitate the use of technology (facilitating conditions), and the social impact of using technology (social influence).

This study aims to comprehend the following research objectives using the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, and Davis, 2003).

Research Objective 1. To investigate factors that could drive InsurTech adoption by customers using the Unified Theory of Acceptance and Use of Technology (UTAUT).

Research Objective 2. Identify how these factors are affected by age, gender, experience, and voluntariness by InsurTech customers in South Africa.

Research Objective 3. To investigate the barriers to adoption of InsurTech by customers in South Africa.

Research Objective 4. Investigating the potential enablers for InsurTech takeover by insurance customers in South Africa.

This leads to chapter three, which presents the research methodology and research design of this study.

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Research approach

In this study, the UTAUT model was put to the test. For the purposes of this study, a quantitative research method (Creswell, 2014) was used to collect insurance and non-insurance customer opinions on Insurance Technology (InsurTech). The study was conducted in the form of a quantitative survey to obtain responses from a selected population in South Africa. Owing to the nature of the questions, the quantitative approach was the most appropriate compared to the qualitative approach. The quantitative survey technique allows for the anonymity of the respondents, which increases the likelihood that replies will be free from prejudice and intimidation and ensures the validity of the data collected. The use of surveys limits the exploration of areas that need focus to understand the causes of responses or to clarify respondents' responses. It also limits the respondent's ability to clarify questions when answering to ensure that all answers truly correspond to the intended result. A higher response rate from a larger population is likely to give a truer indication of the population's views. All respondents completed this quantitative survey at their convenience without any influence of the researcher.

3.2 Research design

This quantitative study used a survey approach (Creswall, 2014) to enable the analysis of data based on a sample of both potential and existing clients in the insurance industry regarding the use of Insurance Technologies. The first part of the survey instrument was to collect demographics and empirical information from respondents for the purposes of data analysis according to different groupings as well as the variables derived from the UTAUT model. The second part covers the survey component, which provided insights on the attitudes and levels of confidence amongst the respondents on the use of Insurance Technology by the South African insurance industry, either for purchasing products or other administration related needs. The third

part of the survey used the UTAUT model to investigate factors that influence customers from adopting Insurance Technology solutions.

This model has been extensively used in prior studies by other researchers to uncover the factors that influence technology adoption by users. The last part includes questions that are open-ended to give respondents space to explain in their own words the enablers as well as barriers to technology adoption when it comes to InsurTech. This research approach is appropriate for the purposes of a study of this nature aiming to provide insights into Insurance Technology adoption or acceptance and requires a sizeable population to respond to a set of structured questionnaire. This study will add to the existing knowledge as well as add insights that will also benefit both InsurTech and incumbent insurance companies.

3.3 Data collection methods

This study made use of an online survey for the purposes of gathering the necessary insights, providing insights using the UTAUT constructs as shown below:

a) Performance expectancy
b) Effort expectancy
c) Social influence
d) Facilitating conditions

The insights from the UTAUT variables 1) gender, 2) age, 3) voluntariness of use and 4) experience will be unpacked through this online survey. As this survey sought a general view from potential and existing insurance customers, a sizeable population was gathered through a set of insurance brokers, financial advisors, insurance companies as well as the general population through the researcher's LinkedIn network. Permission was sought through insurance distribution channels to distribute the online survey through brokers and financial advisors. The survey was also distributed via Wits Business School once permission had been granted to distribute it amongst the post-graduate student population.

This survey was shared through an email containing a link to the survey and respondent were asked to further re-distribute to their networks. All the data received

was primary data, which included respondent demographic data and information to enable an insightful analysis. The data was collected electronically through Qualtrics and data analysed through IBM Statistics Package for Social Sciences Tool (SPSS). To comply with all data privacy and protection laws like POPIA, no personal information was requested or retained.

The survey was designed in such a way that it was easy for respondents to complete using a five-degree Likert scale, where they selected an answer from a list ranging 'Completely Agree' to 'Completely Disagree'. The survey extra open ended questions that allowed respondents to capture what they deemed to be either enablers or barriers to Insurance Technology adoption. These open-ended questions provided insights that will potentially assist with future research studies on the technology adoption phenomena.

3.4 Population and sample

3.4.1 *Population*

For the purposes of this quantitative study, the following population was used:

a) Insurance customers through insurance brokers and financial advisors.
b) Researcher's colleagues.
c) Researcher's LinkedIn network.
d) Wits Business School post-graduate community.

The above population was chosen owing to it being potentially accessible to the researcher for the purposes of this study.

3.4.2 *Sample and sampling method*

The total population was unknown as it depended on the number of clients that each insurance broker and financial advisor had, as well as the number of post-graduate students at Wits Business School, and the researcher's LinkedIn network. Due to this,

a non-probability sample strategy was utilized, which included purposive sampling techniques (Greener, 2008). This specific method was used to target the groups that had a better chance of providing responses that were pertinent and helpful for the study and that were aware of prospective Insurance Technologies. Feedback was obtained from the researcher's colleagues, clients belonging to insurance brokers and financial advisors, Wits Business School's post-graduate population and the researcher's LinkedIn network and was therefore meant to provide a sizeable representation of insights into Insurance Technology adoption in South Africa. The targeted sample size was at least 300 responses to provide meaningful analysis and the required insights for the study.

3.5 The research instrument

An online survey questionnaire technique was employed for this study's aims. A variety of tailored questions, such as those that were in line with the constructs and variables of the UTAUT models, were included in the survey questionnaire (Venkatesh et al., 2003). The questionnaire opened with Part A, which aimed to collect information about participants' experience with Insurance Technology (InsurTech), demographic information, and activities they have undertaken with Insurance Technology (InsurTech). This allowed for analysis of trends between different moderating variables.

Part B collected respondents' perceptions of using Insurance Technology when purchasing insurance or when contacting an insurer.

Respondents answered uniformly and consistently to each of the survey's questions due to the five-degree Likert scale in the questions. This made it easier to analyse the information collected from the responder population. There were six subsections in this section, each of which is mentioned below. The goal of Part B1 was to learn more about how insurance clients feel about InsurTech and other insurance technology solutions in terms of awareness, attitude, and trust. This part is important to provide insights into respondents' perceptions of Insurance Technologies.

The survey's Parts B2 to B6 collected respondents' perceptions about employing insurance technology in comparison to the UTAUT constructs. These were the UTAUT constructs:

a) **Performance expectation:** a separate construct that evaluates how much respondents believe InsurTech will enhance their interactions with insurers, insurance products, etc. It examines whether respondents believe InsurTech improves their interaction with insurers at any point along the insurance value chain.
b) **Effort expectancy:** This separate concept evaluates how simple it is to understand and use insurance technologies while interacting with an insurer.
c) **Social influence/beliefs:** An independent construct that evaluates how much a person takes into account the affiliations or persons who have an impact on his or her actions or opinions about the usage of InsurTech while making decisions or conversing with an insurer about insurance-related issues.
d) **Facilitating conditions:** An independent construct that evaluates how much respondents believe the insurance business has the necessary infrastructure and support in place to allow them to use insurance technology when interacting with an insurer.
e) **Behavioural intention: t**he degree to which respondents' intentions to embrace and use InsurTech will be impacted. It is a construct that is reliant on each of the previously mentioned independent components. A person's desire to adopt a certain technology has a beneficial impact on that technology's uptake. Understanding how this variable relates to the independent variables discussed before was essential**.**

These questions were connected to the UTAUT model, and the relationship between these elements was evaluated at to see how it affected how customers accepted Insurance Technology solutions. It is a well-known model that has been applied in various earlier empirical investigations to evaluate the uptake and application of technology. The survey questionnaire utilized the UTAUT model as a result. Two open-ended questions in Part C requested respondents to express their opinions on the top three factors that facilitate and hinder the adoption of insurance technology

solutions. This made it possible to spot tendencies and maybe employ them in later research projects. The rationale for using an online survey was to give respondents the freedom to complete the survey anytime and anywhere whenever it was convenient for them. In order to encourage candid responses, it also let respondents to respond in a confidential manner. Also, it made sure that the researcher's prejudice and influences were not present in the responses. The Qualtrics Survey Software was used to conduct this online questionnaire, and the responses were electronically saved for analysis. Under **Appendix A**, the survey questionnaire has been added.

3.6 Procedure for data collection

For the purposes of this quantitative research, the survey was created as an online questionnaire using Qualtrics Survey Software with a link directing respondents to the questionnaire (Creswell, 2014; Greener, 2008). The researcher engaged the relevant distribution CEOs, insurance brokers and financial advisors who are part of the organisation employing the researcher, to discuss the research objectives and the value it will bring to the organisation as well as the industry. After reaching consensus, the insurance brokers and financial advisors emailed the survey to their client groups asking them to participate in the survey. The researcher also maintains personal relationships with several insurance brokers and financial advisors. The researcher also engaged with Wits Business School to obtain approval and uncover the process to distribute the survey to post-graduate students. The researcher also engaged with his employer to get permission to send the survey link to colleagues and other stakeholders. Through internal communications from the researcher's employer, an electronic notice explaining the purpose of the study was shared along with the link to the survey. The researcher also used a wider network within the insurance industry and engaged with some members of that network for assistance in disseminating the online survey.

The researcher added the survey link to his personal LinkedIn page so that his network could fill out the survey questionnaire. Response counts were tracked weekly, considering routine reminders to increase response rates. The survey included a note

to remind the respondent that they should not take the survey again if they had already taken it through one of the other channels.

3.7 Data analysis strategies and interpretation

The IBM Statistical Package for the Social Sciences Tool was used to analyse the data from the survey data (SPSS). A multi linear regression analysis strategy was adopted since the UTAUT model takes into account the interactions between the independent constructs and other factors with the dependent variable (behavioural intent) (Creswall, 2014; Greener, 2008). In order to understand how the independent constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) and the dependent construct (behavioural intention) interact to influence the adoption of InsurTech, the researcher was able to establish the causal relationship between them. To ascertain how each construct is impacted by the factors (age, gender, voluntariness, and experience), the constructs are additionally rated in respect to each of the four variables.

A t-test is used to determine the difference in scores between existing insurance customers and non-customers. This allows the researcher to determine whether or not the results differ depending on respondents' understanding of insurance. The text analysis approach was used for text mining, word frequency, collocation, text extraction, keyword extraction, and clustering data analysis techniques was used to analyse the responses to two open-ended questions in the survey's questionnaire. In order to guarantee that the barriers and enablers to the adoption of InsurTech are recognized, this was utilized to determine the common themes from all responses. The text analysis was carried out using R Studio.

3.8 Possible limitations and challenges of the study

Not many empirical studies have been carried out on the adoption of InsurTech in South Africa, for comparison purposes with the results of this study, therefore the comparisons are mostly done with global results.

Due to the nature of study (quantitative), participants were not always able to elaborate on their perceptions or views to enable a deeper understanding of the phenomena being studied.

Participants in the study may not always have full understanding of Insurance Technology, partly owing to insurance being a one- or two-time engagement (primarily interacting with an insurer for the purposes of acquiring insurance and at claim stage). The study could be prone to non-response biases owing to respondents not being willing to participate in the study.

3.9 Quality Assurance

3.9.1 *External validity*

According to King and He (2005), external validity is plays a key role in determining the usefulness of results (King and He, 2005) (King & He, 2005). External validity is responsible for confirming whether results get generalized to a population (Salkind, 2010) (Salkind, 2010). Non-response bias has an influence on external validity (King and He, 2005). According to Bhattacherjee (2012) survey studies normally have low response rates, which leads to a non-response bias. Steps aimed at reducing non-response bias were taken by ensuring the respondents were informed of the study before sending them the online survey, using terms familiar to respondents when referring to the insurance industry and its technology. This ensured anonymity and confidentiality.

3.9.2 *Internal validity*

Internal validity is established when the study is demonstrating a causal relationship between independent and dependent variables (Saunders et al., 2009). The changes in dependent variables are caused by changes in independent variables and not due to other external factors (Bhattacherjee, 2012). The internal validity of the study would

be affected by past events (Saunders et al., 2016). The majority of the respondents were those who would have been previously exposed to insurance or Insurance Technology.

Also, the UTAUT model is based on some of the established models like TAM as well as TPB and has been used by other researchers, demonstrating both validity and reliability.

3.9.3 *Reliability*

Reliability examines how consistently a measurement produces findings under various contexts and circumstances (Saunders et al., 2016). The study employed internal consistency as it is regarded as reliable and is frequently used to assess accuracy (Olsen, 2004). Several academics have used and still use the UTAUT model to examine the variables that affect the adoption and acceptance of technology. As such, the study may be repeated to identify any gaps and patterns for further research. For this reason, the Cronbach Alpha coefficient approach was used to assess dependability.

3.10 Ethical considerations

A crucial component of research is ethical consideration, with rules of conduct controlling researchers when it comes to study participants and respondents, preventing injury to or conflict with respondents (Saunders et al., 2016). Participants in this study were made aware of the anonymity, confidentiality, and informed consent requirements for ethical consideration. As part of this study, the informed consent information was shown on the first screen of the online survey. An explanation was given to participants on; a) the nature of the study, b) voluntary participation, c) no rewards to be lost or gained by participation or no participation, d) that respondents can withdraw from the survey at any time. The ethics clearance certificate number is WBS/DB593852/259.

To ensure confidentiality, the collected data was kept safely and confidentially, protected against unauthorised access and participants were informed that the information would be used purely for the purposes of this study. All demographic information that was collected through the survey could not be linked back to any participant, ensuring anonymity, and this also included the analysis of the data, ensuring it didn't link back to any participant or respondent. To obtain permission to conduct the study, different key individuals that include insurance brokers and financial advisors, Wits Business School and the employer of the researcher were engaged and consulted. This study was also conducted according to the guidelines provided by Wits Business School including the researcher completing an ethics form.

Table 3.10:1 Consistency table: research questions, propositions, data collection and data analysis

RO #	Research Objective	Literature Survey	Source of data	Type of data	Analysis
1	To investigate factors that could drive InsurTech adoption by customers using the Unified Theory of Acceptance and Use of Technology (UTAUT).	Venkatesh et al. (2003)	Survey Questionnaire From Parts B2-B6.	Quantitative Data	Analysed through: ● Multiple linear regression ● T-Test
2	Identify how these factors are affected by age, gender, experience, and voluntariness by InsurTech customers in South Africa	Venkatesh et al. (2003)	Survey Questionnaire From Parts B2-B6	Quantitative Data	Analysed through: ● Multiple linear regression ● T-Test
3	To investigate the barriers to adoption of InsurTech by customers in South Africa	Slazus (2022), Tian et al. (2020), Mandina & Matsika (2021), Lee et al. (2015)	Survey Questionnaire Part B1: Question 2C	Qualitative data	Analysed through text analytics

RO #	Research Objective	Literature Survey	Source of data	Type of data	Analysis
4	Investigating the potential enablers for InsurTech takeover by insurance customers in South Africa	Gowanit et al. (2016), Gebert-Persson (2019), Slazus (2022)	Survey Questionnaire Part B1: Question 2C	Qualitative data	Analysed through text analytics

CHAPTER 4. PRESENTATION OF RESULTS AND FINDINGS

4.1 Respondents' Profile

The participants of this study were both insurance and non-insurance customers in South Africa. The survey was distributed amongst insurance clients through both the Brokers and an InsurTech company. A total of 213 respondents attempted the online survey however some of the respondents did not complete the entire survey which led to differing totals for different constructs. The construct scores were calculated for items with missing value less than 50% of the inferential statistics.

4.1.1 *Age*

Respondents varied in age; 43 (21.2%) respondents were between the ages of 18 and 30), 56 (27,6%) of the respondents were between the ages of 31 and 35, with 46 (22,7%) of them being between the ages of 36 and 40 whilst the reminder of the respondents were 41 years and older 126 (28.6%).

For information on the distribution of respondents' ages, please see table 4.1:1 below.

Table 4.1:1 Respondents' age distribution

Age	Frequency	Percent
18-25 years old	10	4.9
26-30 years old	33	16.3
31-35 years old	56	27.6
36-40 years old	46	22.7
41-45 years old	31	15.3
46-50 years old	11	5.4

Age	Frequency	Percent
51-55 years old	11	5.4
56-60 years old	3	1.5
60 and above years old	2	1.0
Total	203	100.0

4.1.2 *Gender*

Both males and females responded to the research study. Out of the 202 respondents who indicated their gender, 64 (31,7%) were males and 136 (67,3%) were females.

Table 4.1:2 below shows the gender distribution amongst the respondents.

Table 4.1:2 Respondents' gender

Gender	Frequency	Percent
Male	64	31.7
Female	136	67.3
Prefer not to say	2	1.0
Total	202	100.0

4.1.3 *Respondents' Qualifications*

Out of 203 respondents who indicated the qualifications, 26 (12,8%) of the respondent had a matric qualification, 38 (18,7%) had a diploma, 50 (24,6%) had a bachelor's degree, 45 (22,2%) had an Honours degree and 34 (16,7%) had a master's degree.

Table 4.1:3 below shows the distribution of qualifications amongst the respondents.

Table 4.1:3 Respondents' qualification distribution

Qualification	Frequency	Valid Percent
Matric	26	12.8
Diploma	38	18.7
Bachelor's degree	50	24.6
Honours degree	45	22.2
Master's degree	34	16.7
Doctorate	2	1.0
Other	8	3.9
Total	**203**	**100.0**

4.1.4 *Holds an insurance policy or product*

The respondents were asked if they held an insurance policy or product. Out of 202 respondents who indicated that they hold an insurance policy or product, 175 (86,6%) had an insurance policy or product and 27 (13,4) had no insurance policy or product.

Table 4.1:4 below shows the split of insurance policy or product holders and those with no policy or product.

Table 4.1:4 Insurance product holding

Holds an insurance product	Frequency	Valid Percent
Yes	175	86.6
No	27	13.4
Total	**202**	**100.0**

4.1.5 *Has a smart phone device*

Of the 201 respondents who indicated whether they owned a smartphone device or not, 199 (99%) had a smartphone device, while only 2 (1%) did not own a smartphone device. Table 4.1:5 shows the split of respondents who own smartphone device and those who do not own smartphone device.

Table 4.1:5 Smart device ownership

Owns a smartphone device	Frequency	Valid Percent
Yes	199	99.0
No	2	1.0
Total	**201**	**100.0**

4.1.6 *Preferred Device for Online shopping*

Out of the 200 responded who indicated their preferred device for online shopping, 136 (68%) of the respondents indicated that they preferred shopping online using a smartphone device and 64 (32%) preferred shopping online using a computer.

Table 4.1:6 below shows the split of preferred device for online shopping amongst the respondents.

Table 4.1:6 Preferred device for online shopping

Online shopping by device	Frequency	Percent
Smart phone	136	68.0
Computer	64	32.0
Total	**200**	**100.0**

4.1.7 *Knowledge of Insurance Technology solutions*

Of the 201 respondents who responded to the question of whether they had knowledge of Insurance Technology solutions, 93 (46,3%) of the respondents indicated that their knowledge of insurance technology solutions was average, 22 (10,9%) indicated that their knowledge was poor and 78 (38,8%) indicated that their knowledge of insurance technology solutions ranged from good to very good.

Table 4.1:7 below shows the Insurance Technology solutions knowledge level distribution amongst respondents.

Table 4.1:7 Respondents' knowledge of Insurance Technology solutions

Insurance Technology solutions knowledge	Frequency	Percent
Very Poor	8	4.0
Poor	22	10.9
Average	93	46.3
Good	56	27.9
Very Good	22	10.9
Total	**201**	**100.0**

4.1.8 *Experience in the use of insurance technology solutions*

Of the 201 respondents who responded to the question on whether they had experience in using Insurance Technology solutions, 130 (64,7%) of the respondents indicated that they had experience in the use of Insurance Technology solutions and 71 (35,3%) did not have experience in the use of Insurance Technology solutions.

Table 4.1:8 below shows the number of respondents with experience in the use of Insurance Technology solutions and those that do not have experience.

Table 4.1:8 Insurance Technology solutions use experience

Insurance Technology Solutions experience	Frequency	Percent
Yes	130	**64.7**
No	71	**35.3**
Total	**201**	**100.0**

4.1.9 *Bought insurance online before*

Respondents were asked if they previously bought an insurance product online. Out of the 199 responses received, 75 (37,7%) of the respondents indicated that they previously bought insurance online and 124 (62,3%) of the respondents indicated that they have never bought insurance online.

Table 4.1:9 below shows the split between respondents who previously bought insurance online and those who did not.

Table 4.1:9 Previously bought insurance online

Bought insurance online	Frequency	Percent
Yes	75	**37.7**
No	124	**62.3**
Total	**199**	**100.0**

4.1.10 *Intention to buy insurance online*

Respondents were asked if they intended to buy an insurance product online in the future. Out of the 200 responses, 129 (64,5%) more than half indicated that they intended to buy insurance online and 71 (35,5%) indicated that they do not intend buying insurance online.

Table 4.1:10 shows respondents who intend buying insurance online and those who have no intention.

Table 4.1:10 Intention to buy insurance online

Intention to buy insurance online	Frequency	Percent
Yes	129	**64.5**
No	71	**35.5**
Total	**200**	**100.0**

4.2 Reliability Analysis

This study used the Cronbach Alpha to assess the reliability and consistency of the instruments. The range of the Cronbach Alpha coefficient is 0 to 1 (Terre Blanche & Durrheim, 2002). This implies that the item or test will be more dependable the higher the alpha. A desirable dependability coefficient is one with a Cronbach Alpha value of.75 (Terre Blanche & Durrheim, 2002). Nevertheless, reliabilities as low as.30 are acceptable for group testing.

The reliability indicated shows the scales are internally consistent across the constructs because all statistics were above 0.7. The Cronbach alpha values range between 0,784 and0,897 were the lowest and highest numbers, respectively.
Table 4.2:1 below shows the reliability analysis.

Table 4.2:1 Reliability analysis

UTAUT Construct	Cronbach Alpha	Number of items
General knowledge and awareness, attitude and trust of Insurance Technology	0.897	10

UTAUT Construct	Cronbach Alpha	Number of items
Performance Expectancy	0.868	4
Effort Expectancy	0.880	5
Social Beliefs	0.784	6
Facilitating Conditions	0.848	5
Behavioural Intentions	0.866	5

4.3 Descriptive Analysis

To glean insights from the respondents' impressions of the items measuring the constructs, a descriptive analysis was conducted. The examination of these variables is shown below.

4.3.1 *General knowledge and awareness, attitude, and trust of insurance technology*

For general knowledge and awareness, attitude and trust, the average score was 3,47 which is above neutral and average, thereby indicating general knowledge and awareness, attitude, and trust are factors in the adoption of Insurance Technology solutions by customers. In the Likert scale, a score of 1 and 2 means that respondents disagree, a score of 3 means respondents are neutral while a score 4 or 5 mean that respondents agree. The average standard deviation was slightly above 1 at 1,1266.

Table 4.3:1 below shows the distribution of respondent scores regarding general knowledge and awareness, attitude, and trust of insurance technology in the adoption and use of Insurance Technology solutions.

Table 4.3:1 Descriptive analysis: General knowledge and awareness, attitude, and trust of Insurance Technology

B1	General knowledge and awareness, attitude and trust of Insurance Technology	Mean	Std. Deviation
1	I believe that Insurance Technology solutions can simplify my engagement with an insurer	3.86	1.042
2	I would like to use Insurance Technology solutions when I buy or manage my insurance benefits	3.87	1.103
3	I would trust any advice or results I get from the Insurance Technology solutions where my insurance policies are concerned.	3.28	1.047
4	I feel comfortable using the Insurance Technology solutions to buy or manage my insurance benefits or contracts	3.47	1.081
5	I believe my insurance premium would be cheaper if I buy using Insurance Technology solutions instead of a broker or financial advisor.	3.55	1.233
6	I believe Insurance Technology solutions can provide me with necessary information and solutions as and when I need it.	3.54	1.066
7	I believe that Insurance Technology solutions provide reliable information and solutions I require compared to dealing with a human being.	3.18	1.124

B1	General knowledge and awareness, attitude and trust of Insurance Technology	Mean	Std. Deviation
8	My insurer is currently using Insurance Technology solutions.	3.44	1.206
9	My insurance broker/financial advisor currently uses Insurance Technology solutions instead of manual processes.	3.23	1.175
10	I believe Insurance Technology solutions can provide me with the necessary product offering or advice that is more accurate in comparison to that provided by a broker/financial advisor.	3.29	1.104

4.3.2 *Performance Expectancy*

For Performance Expectancy, the average mean score was 3,72 which is above neutral. This score indicates that respondents regarded Performance Expectancy as high in their decision to adopt and use Insurance Technology solutions. Most of the scores were above 3,5 except for the question on whether respondents believed that they could benefit financial by using Insurance Technology solutions where the score was 3,42. The score of 3,42 is closer to neutral or average which indicates that respondents may confidently believe that the use of Insurance Technology solutions will benefit them financially. The average standard deviation is 1,044 of which lowest was 0,993 where respondents were asked whether they believed Insurance Technology solutions would optimise their engagement with insurers.

Table 4.3:2 below shows the distribution of respondent scores regarding performance expectancy in Insurance technology solutions.

Table 4.3:2 Descriptive Analysis: Performance Expectancy

B2	Performance Expectancy	Mean	Std. Deviation
11	I believe I would save time while using Insurance Technology in insurance.	3.88	1.067
12	Insurance Technology solutions would optimise my engagement with an insurer.	3.77	.993
13	Insurance Technology solutions in the insurance industry would help me to maintain policies and benefits and keep them top of mind.	3.81	1.033
14	With the use of Insurance Technology solutions, I can benefit financially.	3.42	1.084

4.3.3 *Effort Expectancy*

For Effort Expectancy, the average mean score was 3,69 which is above neutral. This score indicates that respondents regard Effort Expectancy as high in their decision to adopt and use Insurance Technology solutions. The average standard deviation was 1,034 with lowest being 0,968 and the highest being 1,082. This shows that the data stable and outliers are fewer which means the data had a narrower spread and centred around the average.

Table 4.3:3 below shows the distribution of respondent scores regarding Effort Expectancy in Insurance Technology solutions.

Table 4.3:3 Descriptive analysis: Effort expectancy

B3	Effort Expectancy	Mean	Std. Deviation
15	Insurance Technology solutions like insurance websites and apps are easy to use.	3.52	1.074
16	It's easy to learn how to use Insurance Technology solutions like websites and apps.	3.66	1.050
17	I have the necessary skills and confidence to use Insurance Technology solutions.	3.98	.968
18	It makes my life easier when I engage with an insurer using the Insurance Technology solutions like websites and apps.	3.79	.996
19	It's easy to understand the products and policy information through Insurance Technology solutions.	3.51	1.082

4.3.4 *Social Beliefs*

On Social Beliefs, the average score was 2,86 which is close to neutral and below average, thereby indicating fewer Social Beliefs or influence in the Insurance Technology solutions. Respondents indicated less usage of technology solutions by friends and families in buying insurance products and engagement with insurers.

Table 4.3:4 below shows the distribution of respondent scores regarding Social Beliefs in Insurance technology solutions.

Table 4.3:4 Descriptive analysis: Social beliefs

B4	Social Beliefs	Mean	Std. Deviation
20	My family and friends use Insurance Technology solutions when engaging with their insurers.	2.66	1.188
21	My family and friends have bought insurance policies using Insurance Technology solutions (e.g., websites, apps, chatbots)	2.50	1.156
22	In my network of friends, there is an expectation that one should use Insurance Technology solutions when engaging with insurers	2.89	1.127
23	My insurance broker/financial advisor encourages me to use Insurance Technology solutions like apps, webchats etc.	3.02	1.260
24	It's easier to deal with an insurance broker/financial advisor as opposed to using Insurance Technology solutions.	3.16	1.191
25	The ability to buy and manage my insurance policies through Insurance Technology solutions gives me a higher status than those who cannot.	2.92	1.238

4.3.5 *Facilitating Conditions*

the majority of responses to the constructs were indifferent, it appears that insurance firms were not putting enough effort to encourage the adoption of Insurance Technology. Respondents also indicated the issue of online safety, ease-of-use and understandable language. This can create an opportunity for insurance companies to invest in creating safe, ease to use solutions and develop good strategies to promote

the solutions as well as the adoption. The average score of 3.38 is low for Facilitating Conditions.

Table 4.3:5 below shows the distribution of respondent scores regarding Facilitating Conditions in the adoption and use of Insurance Technology solutions.

Table 4.3:5 Descriptive analysis: Facilitating Conditions

B5	Facilitating Conditions	Mean	Std. Deviation
26	My insurer promotes the use of Insurance Technology solutions e.g., websites, webchats, and apps etc.	3.49	1.214
27	My Insurer's Technology solutions are easy to navigate.	3.36	1.140
28	My Insurer's Technology solutions are designed with easy-to-understand language.	3.43	1.166
29	My Insurer's Technology solutions caters for my language preferences.	3.07	1.365
30	My Insurer's Technology solutions look safe to use.	3.54	1.088

4.3.6 *Behavioural Intention*

Most of the responses to the constructs were neutral regarding the respondents' intention to use the insurance technology solutions. The average score of all the constructs is 3,74 which could indicate a slightly positive Behavioural Intention by most respondent.

Table 4.3.6 below shows the distribution of respondent scores regarding Behavioural Intention in the adoption and use of Insurance technology solutions.

Table 4.3:6 Descriptive analysis: Behavioural Intention

B6	Behavioural Intention	Mean	Std. Deviation
31	I have an intention of buying insurance through Insurance Technology solutions e.g., insurance website or insurance apps.	3.33	1.293
32	I have an intention to viewing my insurance policies using Insurance Technology solutions e.g., insurance website or Insurance apps.	3.89	1.135
33	I have an intention of adjusting my insurance policies using Insurance Technology solutions e.g., insurance website or Insurance apps.	3.77	1.141

B6	Behavioural Intention	Mean	Std. Deviation
34	I want to know more about the benefits of using Insurance Technology solutions.	3.96	1.176
35	I do intend on engaging with an insurer through Insurance Technology solutions.	3.74	1.154

4.4 Correlations

The study used the Pearson correlation test to analyse the relationship between variables and evaluate whether there is a correlation between dependent variables.

4.4.1 *Correlation analysis*

Although it can be challenging to isolate the relationship between dependent variables, it is crucial to comprehend this relationship to assess whether the variables are associated. Cohen (1988:75) states that the Pearson correlation test is a statistical technique frequently used to ascertain whether a relationship exists between two or more variables. The associations between each independent variable were examined using a Spearman Correlation Analysis test. The correlation analysis's results are shown in Table 4.4:1 below. Correlation is significant if the p-value (probability value) is less than 0.05 or 0.01. The correlation coefficient r range between -1 and 1 with values close to 1 or -1 indicating strong correlations. See the footnote on table for the significant correlations.

The study results show that the correlation between Behavioural Intention and PE (Performance Expectancy) (r = 0.726) is slightly higher compared to other variables correlated to the Behavioural Intention. The coefficient intervals range from medium to strong despite the excellent correlation, showing that they did not match. A validity test was supported by this.

Table 4.4:1 Correlation analysis

	General knowledge and awareness, attitude and trust of Insurance Technology	PE	Effort Expectancy	Social Beliefs	Facilitating Conditions	Behavioural Intentions
General knowledge and awareness, attitude and trust of insurance technology	--					
Performance Expectancy	0.737**	--				
Effort Expectancy	0.703**	0.653**	--			
Social Beliefs	0.396**	0.356**	0.410**	--		
Facilitating Conditions	0.586**	0.492**	0.624**	0.583**	--	
Behavioural Intentions	0.660**	0.726**	0.637**	0.380**	0.498**	--

**. Correlation is significant at the 0.01 level (2-tailed).

4.5 T-Test Analysis

4.5.1 *T-test analysis (Insurance Product Holding)*

The Levene's test of equality of variance was first performed; variances were equal for most constructs where p-values are greater than 0.05, except for Behavioural intentions with p-value being less than 0.05., which means the p-value for unequal variances was reported.

This section tested for equal variances between two statistical samples (those who hold and insurance product and those who do not), below is the test process that was followed:

I. H0 (null hypothesis): variances between the two statistical samples ‘yes’ (have an insurance product) and ’no’ (does not have an insurance product) are equal, or the same.
II. H1 (alternative hypothesis): variances between the two statistical samples ‘yes’ (have an insurance product) and ’no’ (does not have an insurance product) are not equal, or not the same.

(iii) Significance level:0.05 or 5%
(iv) Critical value: 1.9855
(v) Critical region: Rejects H0 if F-statistic = 2.795 and greater than 1.98555.

The analysis as an example considers variable PE: since the F-statistic greater than 1.9855, where F = 2.795, and therefore rejects H0, and this is borne out by the p-value of 0.096. This p-value is greater than 0.05 and it is less than 0.1, therefore null hypothesis (H0) is rejected at 10% significance level. The conclusion is that the variance between those with an insurance product and those without an insurance product are not equal.

When looking at the t-test for the same variable (Performance Expectancy), the analysis tests for equal means.

The process followed is as follows:

I. H0 (null hypothesis): the two sample for ‘‘yes’ (have an insurance product) and ’no’ (does not have an insurance product) means are equal.
II. H1 (alternative hypothesis): the two sample means between the ‘yes’ (have an insurance product) sample and the ‘no’ (does not have an insurance product) sample are NOT equal.

(iii) Significance level: any level, however 0.05 or 5% was chosen
(iv) Critical value is 1.96
(v) Critical region: the analysis rejects H0 if the absolute value of t is > 1.96.

In conclusion, since the t-statistics = abs (-0.421) are equal to 0.421 and less than 1.96, H0 (null hypothesis) cannot be rejected, and therefore conclude that the population mean of those who have an insurance product and those who do not have insurance products are the same or are equal. Therefore, for the Performance Expectancy (PE) variable, the variances are not necessarily equal, but the means are equal. The inferences are pertaining the larger consumer population from which the samples were drawn for statistical testing and analysis, therefore the same interpretation can be made about other variables.

When assessing the Behavioural Intention variable, the means are very closely aligned between the ‘yes’ (have an insurance product) sample and the ‘no’ (does not have an insurance product) samples, and the standard deviations are also only marginally different, therefore concluded that the variances are the same. The basis for this conclusion is based on the F-statistic for equal variances and the t-statistic for equal means where the conditions are as follows, based on the hypothesis tests:

F = 0.01 (p-value is greater than 0.05), there any observed differences between ‘yes’ (have an insurance product) sample and the ‘no’ (does not have an insurance product) are not statistically significant.

t = -0.36, which means abs(t) is equal to 0.36 (p-value is greater than 0.05). In this instance, any observed differences between the means for ‘yes’ (have an insurance product) sample and the ‘no’ (does not have an insurance product) samples are not significant either.

In conclusion, for the Behavioural Intention variable, there is not much difference between the two samples. Thus, the two populations from which the two samples were drawn are the same, or not different in their characteristics. In the t-test, the null hypothesis is that the means are equal between the groups. The null hypothesis is rejected if the p-value is 0.05, and it is not rejected if the p-value is greater than 0.05. Since the p-values in the above table are all greater than 0.05, the null hypothesis cannot be rejected. Therefore, the mean scores differ statistically. See Table 4.5:1 for the results below.

Table 4.5:1 T-Test analysis (Insurance product holding)

					Levene's Test for Equality of Variances		t-test for Equality of Means		
	Has an insurance product or policy	**N**	**Mean**	**Std. Deviation**	**F**	**Sig.**	**t**	**Df**	**Two-Sided p**
General knowledge and awareness, attitude and trust of insurance technology	Yes	163	3.4779	0.79303	0.473	0.492	0.217	187	0.828
	No	26	3.4408	0.90639					
PE	Yes	149	3.7187	0.85641	2.795	0.096	-0.421	168	0.674
	No	21	3.8056	1.06957					
Effort Expectancy	Yes	155	3.6685	0.88218	0.271	0.603	-0,719	177	0.473
	No	24	3.8056	0.77918					
Social Beliefs	Yes	155	2.8176	0.82617	0.666	0.416	-1,843	177	0.067
	No	24	3.1556	0.89786					
Facilitating Conditions	Yes	154	3.3657	0.91275	2.930	0.089	-0,543	176	0.588
	No	24	3.4792	1.18358					
Behavioural Intentions	Yes	146	3.7299	0.95730	0.010	0.921	-0,36	168	0.719
	No	24	3.8062	0.99305					

4.5.2 *T-test analysis (Previously bought insurance online)*

The t-test for Equal Means was used to test for equal means between two or more statistical samples. In this case, this analysis was done for two samples, being those who have previously brought insurance online and those have not bought insurance online.
Looking at the Behavioural Intention variable, the test equal variances is as follows:

I. H0 (null hypothesis): variances between the two statistical samples for ‘yes’ (previously bought insurance online) and ’no’ (has not bought insurance online) are equal, or the same.
II. H1 (alternative hypothesis): variances between the two statistical samples (‘yes’ (previously bought insurance online) and ’no’ (has not bought insurance online) are not equal, or not the same.

(iii) Significance level is 0.05 or 5%
(iv) Critical value is 1.9855
(v) Critical region: null hypothesis (H0) is rejected because F-statistic is greater than 1.98555.

F is equal to 3.841, which is greater than 1.985 and p-value is approximately 0.05, and therefore rejected null hypothesis (H0) at 5% level and concluded that the variances between the two statistical samples are different and thus not equal. Since p-value is equal to 0.05, which means the variances between the two population variances are significantly different.

Therefore, the test for equal means the following:

I. H0 (null hypothesis): the two sample (‘yes’ (previously bought insurance online) and ’no’ (has not bought insurance online) means are equal.
II. H1 (alternative hypothesis): the two sample means between the ‘yes’ (previously bought insurance online sample) and the ‘no’ (has not bought insurance online) sample are NOT equal.
III. Significance level: any level can be chosen. In this case, 0.05 or 5% was chosen
IV. Critical value: 1.96
V. Critical region: Rejects H0 if the absolute value of t is greater than 1.96.

In conclusion, since the t-statistics is equal to 3.12 and greater than 1.96, null hypothesis (H0) is rejected, and thus concluded that the population means of those who bought insurance online and

those who did not buy insurance online are not the same, therefore not equal. Given that p-value is less than 0.05, the test concluded that the two populations mean are significantly different.

All the tests are significant with p-values less than 0.05, for those who indicated yes that they purchased insurance online, they had a higher mean score (3.853) on General Knowledge and Awareness, attitudes, and trust of insurance technology than those who indicated no (3.233). The same interpretation applies to other constructs as well. Refer to table 4.5:2 below for the results.

Table 4.5:2 T-Test analysis (Previously bought insurance online)

					Levene's Test for Equality of Variances		t-test for Equality of Means		
	Have you bought insurance online in the past?	N	Mean	Std. Deviation	F	Sig.	t	df	Two-Sided p
General knowledge and awareness, attitude and trust of insurance technology	Yes	71	3.8532	0.71240	0.599	0.440	5.552	187	<0,001
	No	118	3.2337	0.76057					
PE	Yes	68	4.0061	0.75754	4.161	0.043	3.444	168	<0,001
	No	102	3.5449	0.91435					
Effort Expectancy	Yes	68	3.9819	0.82744	0.250	0.617	3.681	177	<0,001
	No	111	3.5062	0.84632					
Social Beliefs	Yes	69	3.0502	0.88312	0.551	0.459	2.390	177	0.018
	No	110	2.7455	0.79596					
Facilitating Conditions	Yes	68	3.6926	0.84466	1.135	0.288	3.691	175	<0,001
	No	109	3.1717	0.95332					
Behavioural Intentions	Yes	67	4.0097	0.84042	3.841	0.052	3.120	167	0.002
	No	102	3.5516	0.98999					

4.6 Regression Analysis

To evaluate the research objective one, a regression analysis was used to discover the link between independent variables and dependent variables that impact the adoption and usage of insurance technology solutions : To investigate factors that impact or influence consumers' decisions in South Africa to adopt and use insurance technology solutions using the UTAUT model.

The significance of the relationship (based on the p-value) and the beta coefficient, or β -value, which identifies which of the independent variables affects or is a strong predictor of the dependent variable. The R^2 value measures how well the dependent variable can be predicted by the independent variables. The regression model used was evaluated against the subsequent data:

$$Y\ (Behavioural\ intention) = a + \beta 1 * Performance\ expectancy + \beta 2 * Effort\ expectancy + \beta 3 * Social\ influence + \beta 4 * Facilitating\ conditions,$$

where:

- a= constant
- b= Beta, regression coefficient

According to table 4.6:1 (detailed regression analysis), the independent variables have a 62,7 percent predictive power for the dependent variable (behavioural intention) (R^2). The p-value for the regression model (F=54.576) is less than 0.05, indicating the significance of the correlations between the dependent and independent variables.

The detailed results of the regression model that is highlighted above are shown below on Table 4.6:1.

Table 4.6:1 Detailed regression analysis

Predictors	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Model Summary		
	B	Std. Error	Beta			F	P-Value	R Square
(Constant)	0.215	0.226		0.950	0.344	54.576	<0,001	0.627
General knowledge and awareness, attitude and trust of Insurance Technology	0.434	0.098	0.367	4.417	<0,001			
Performance Expectancy	0.284	0.084	0.277	3.384	<0,001			
Effort Expectancy	0.226	0.079	0.214	2.864	0.005			
Social Beliefs	0.046	0.064	0.043	0.718	0.474			
Facilitating Conditions	-0.005	0.068	-0.006	-0.081	0.935			

The equation is written as follows using the results in table 4:20 above: **Behavioural Intention**= 0.215+0.434*General Knowledge + 0.284*Performance Expectancy + 0.226*Effort Expectancy + 0.046*Social Beliefs + -0,005*Facilitating Conditions.

The three variables that are significant predictors of Behavioural Intention are general knowledge and awareness, attitude and trust, Performance Expectancy and Effort Expectance with a p-value less than 0.05. If the Performance Expectancy score increases by a unit, the Behavioural Intention score will also increase by 0,434 units. The same interpretation can be made for the other variables.

The significance level helps to see which of the regressors, or independent variables are predictive. A regressor is predictive if it is statistically significant at a 5%, 1% etc level of significance. Therefore, since 5% is always chosen by default, the regressor is predictive if the p-value is 0.05 or lower. Based on this regression model, variables “General knowledge and awareness…”, “Performance expectancy” and “Effort expectancy” are predictive since their p-values are lower than 0.05. The regression model is statistically significant at the 1% significance level.

Based on the detailed analysis, three variables that significant predictors of customers’ Behavioural Intention to use insurance technology solutions are general knowledge and awareness, attitude and trust, Performance Expectancy and Effort Expectancy as demonstrated by the p-values of that were less than 0.001 general knowledge and performance expectancy. If the Performance Expectancy score increases by a unit this will also increase the Behavioural Intention score by 0.434 units. The p-values are also indicated as less than 0,05.

The strongest positive correlation was seen with the general knowledge and awareness, attitude, and trust variable, as indicated by the beta coefficient (β value) of 0.434. With a beta coefficient (β value) of 0,284, the Performance expectancy variable demonstrated a significant positive connection and lastly Effort Expectancy variance also had a positive correlation as demonstrated by the beta coefficient (β value) of 0,226. The user's behaviour intention to utilise insurance technology solutions would therefore be incrementally positively influenced if these independent factors were to increase in a positive manner. For a thorough explanation of the relationships between the variables, see table 4.6:1 above.

According to the regression analysis, the following conclusion are made:

- Customers in South Africa's behavioural intention to accept the usage of insurance technology solutions is influenced by factors such as general knowledge and awareness, attitude, and trust.
- Performance Expectancy does have an influence on South African customers' behavioural intentions to use insurance technology solutions.
- The Behavioural Intention of South African consumers to adopt the use of Insurance Technology solutions is influenced by Effort Expectancy.
- Social Beliefs does not have a significant relationship with Behavioural Intention to adopt the use of Insurance Technology solutions by customers in South Africa.
- Facilitating Conditions does not have a significant relationship with Behavioural Intention to adopt the use of Insurance Technology solutions by customers in South Africa.

4.7 Moderated regression analysis

To determine how the moderating variable (age, gender, experience, and customer voluntariness) influences the independent variables for research objective 2, a linear and moderated regression analysis was performed. The moderated regression model considers all its independent variables, Moderator variables (demographics) and how they interact and influence the dependent variable. Moderation is tested through the interaction between all these independent variables. Variables that were predictive in the previous model are no longer predictive because they are also affected by other variables, hence the t-values dropped to below 1.645, where the p-value increased to more than 0.05. Based on the Moderated regression analysis Table 4.7:1, the results were not significant as all the t-values are less than 1.645 which implies that the p values are all greater 0.05. Refer to the Moderated regression analysis below which shows that the moderated regression model is consistent with the R^2 of 0.627, or 62.7%, in that the model only accounts for 62.7% of the variation in behavioural intentions.

Age, gender, and experience variables had no discernible impact on the association between any of the UTAUT components and South African customers' behavioural intention to adopt Insurance Technology solutions. It was established that voluntariness of use has no impact on the influence between facilitating conditions and behavioural intention. The influence with the other UTAUT variables and behavioural intention were unaffected by the voluntariness of use. Table 4.7:1 below refers. The following can be concluded:

- Age does not significantly affect the constructs of performance expectancy, effort expectancy, or facilitating conditions, which are factors in whether South African consumers will accept using Insurance Technology solutions.
- According to statistics, there was no relationship between gender and the independent factors that customers' behavioural intentions to adopt and use insurance technology solutions.
- In South Africa, customers' behavioural intentions to accept and use insurance technology solutions are not significantly influenced by experience or other independent variables.
- There is no statistically significant correlation between the willingness to utilize insurance technology solutions and the performance expectations, effort expectations, and social belief frameworks that affect customers' behavioural intentions to use insurance technology solutions in South Africa.
- There is no correlation between South African customers' behavioural intents to embrace the adoption and use of insurance technology solutions and the performance expectations, effort expectations, or social attitudes that may influence such intentions. In conclusion, the model is not statistically significant since all the variables are not predictive

Table 4.7:1 Moderated regression analysis

	Behavioural Intentions							
	Gender		**Age**		**Experience**		**Voluntariness of use**	
	Coefficient	**T**	**Coefficient**	**T**	**Coefficient**	**T**	**Coefficient**	**T**
General knowledge and awareness, attitude and trust of Insurance Technology	0,177	0,781	-0.007	-0,175	-0.018	-0.294	0,195	1,291
Performance Expectancy	0,045	0,374	0,033	1,044	-0.004	-0.079	-0.150	-0,123
Effort Expectancy	0,167	1,124	0,008	0,199	0,104	1,698	-0.023	-0,156
Social Beliefs	0,239	0,186	0,019	0,375	0,045	0.550	0,302	1,828
Facilitating Conditions	0,086	0,585	0.005	-1,21	0,114	.1.876	-0.215	1,508
R2	0,627							
Adjusted R2	0,616							

The results were not significant as all the t-values are less than 1.645 which implies that the p values are all greater than 0.05.

4.8 Text Analysis

For research objective three and four, survey respondents were asked to provide information that they deemed to be the top three barriers and enabler to the adoption of Insurance Technology solutions by customers in South Africa. The survey data received from respondents was then processed through R-Studio. R is a language and environment for visual design and statistical computing. It offers a wide range of graphical and statistical tools and is quite expandable. Natural Language Processing (NLP) and plot generation are two areas where R offers a wealth of packages. The first step is to import the text file into a R studio, after which the data gets cleaned and stemmed before analysis. For this analysis, Wordcloud was used to generate word cloud plotting. The word cloud displays other words that are often used and might be relevant for further analysis. The other component is the document matrix which is a table showing the word's frequency.

4.8.1 *Word cloud barriers*

It appears that the prominent words that were used were lack of information, data, need, complexity, trust and safety.

Figure 4.8:1 below shows the word cloud and the prominent words that were used to highlight the barriers to insurance technology solutions adoptions. Figure 1:4 shows the frequency in which the words came up in the respondents' survey feedback. The meaningful feedback from the respondents can be summarised as follows regarding what they deem to be the barriers to insurance technology adoption:

- Lack of information is a barrier to Insurance Technology adoption by customers in South Africa.
- Lack of mobile data is a barrier to Insurance Technology solutions by customers in South Africa.
- Complex technology that is difficult to understand is a barrier to Insurance Technology adoption by customers in South Africa.

- Online scams and lack of knowledge are a barrier to Insurance Technology solutions adoption by customers in South Africa.
- Lack of online security is a barrier to Insurance Technology solutions adoption by customers in South Africa.

Respondents also highlighted words like cost, accessibility, issues, processes and time etc. as barriers to Insurance Technology solutions adoption by customers in South Africa.

Figure 4.8:1 Word cloud: Barriers to adoption

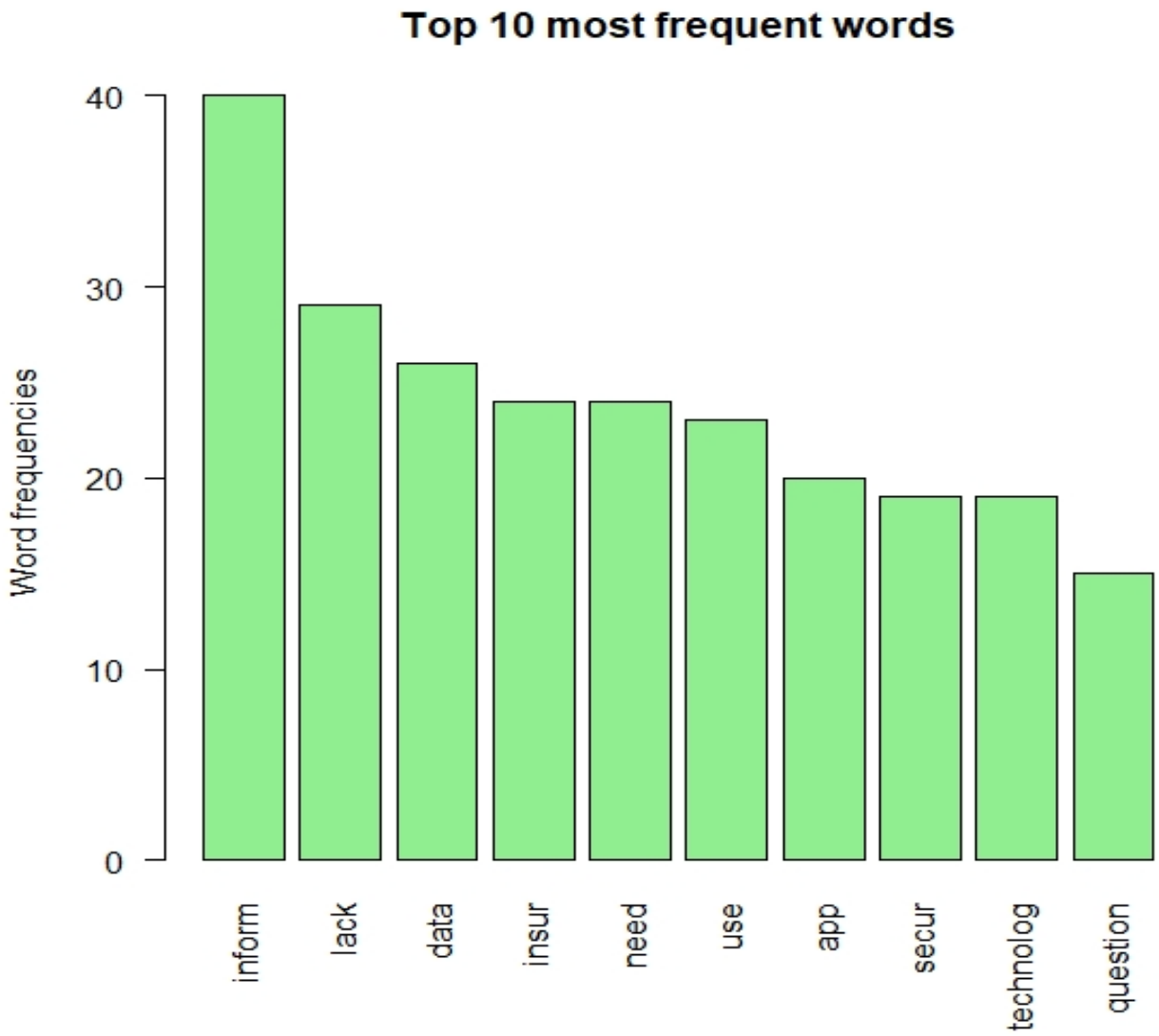

Figure 4.8:2 Word frequency: Barriers

The word frequency figure 4.8:2 above, shows the barriers as highlighted by respondents in order of frequency. The words that have a higher frequency are:

- Information and lack of it
- Lack of data
- Not addressing the needs

4.8.2 *Enablers (word cloud)*

From the feedback received from the survey, it appears the words that are prominent include ease-of-use, accessibility, accessibility of information, reliable technology, and mobile applications. Some of the other words that were list mentioned include safety, quick responsiveness, user friendly etc.

Figure 4.8:3 below shows the word cloud enablers which highlights the key words. Figure 4.8:4 shows the word frequency (numbers of time a certain key word was highlighted by respondents as enablers to Insurance Technology solutions adoption). Based on analysis of the word cloud, the respondents' highlighted the following to be the enablers of Insurance Technology adoption:

- Easily accessible information is an enabler of Insurance Technology solutions adoption by customers.
- Accessible technology is an enabler of Insurance Technology solutions adoption by customers in South Africa.
- Ease-of-use is an enabler of Insurance Technology solutions adoption by customers in South Africa.

The respondents also highlighted other themes like responsive app, quick and responsiveness of the technology, easy to understand language, secure, simple and helps customers to save.

Figure 4.8:3 Word cloud: Enablers

In terms of the frequency table on enablers the ranking of word which came high are: easily, accessible, use, app and insurance etc.

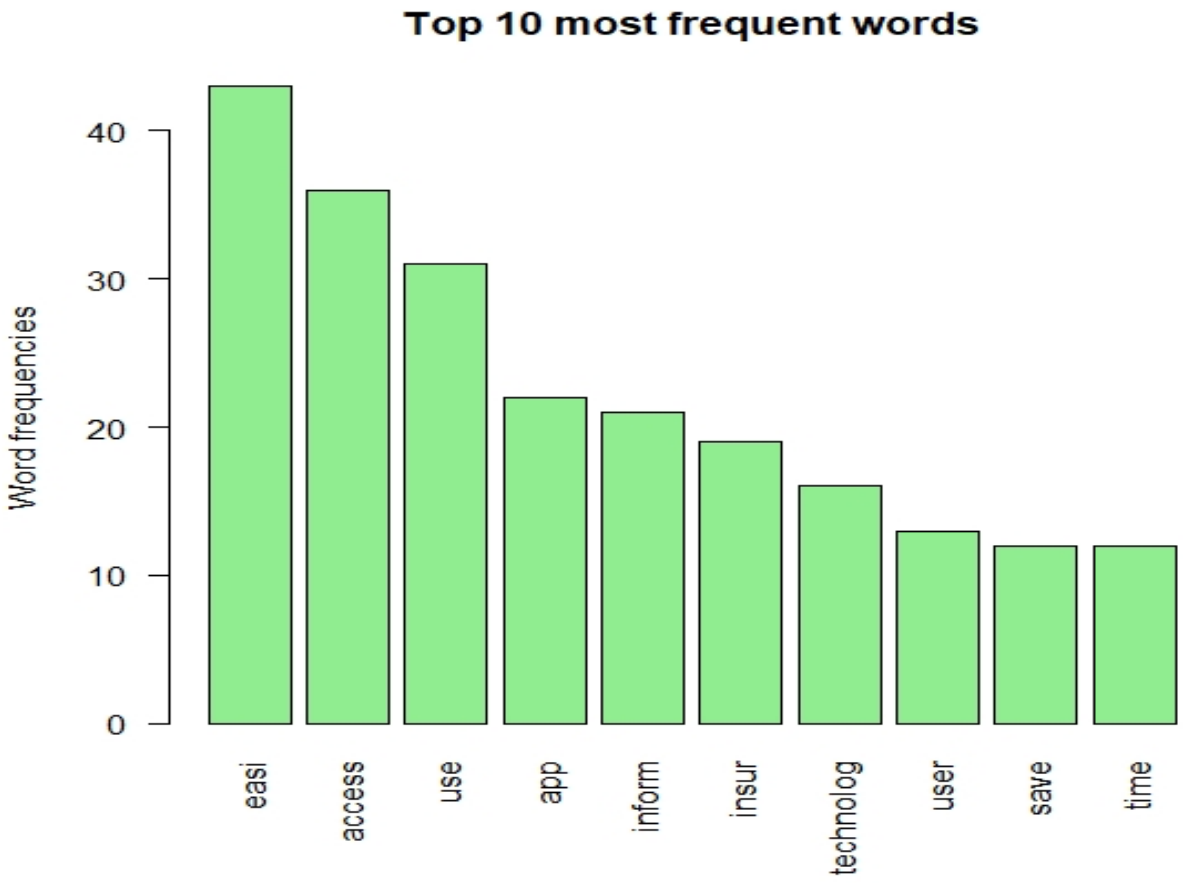

Figure 4.8:4 Text Analysis: Word Frequency (Enablers)

4.8.3 *Sentiment scoring and classification (Barriers)*

A further analysis using AI function on PowerBI was done to solidify the analysis of other component of text analysis. The sentiment score ranging from standard scale of 0,75 and above is positive and below 0,75 to 0,25 is neutral, while any scores below are 0,25 indicate a negate sentiment. Based on the information on average sentiment score by barrier group, the sentiment is neutral although tilting towards negative.

This still means insurance companies have the opportunity to make the necessary changes, improvements and investments that will create an enabling space for consumers to adopt the insurance technology solutions. Refer to figure 4.8:5 below.

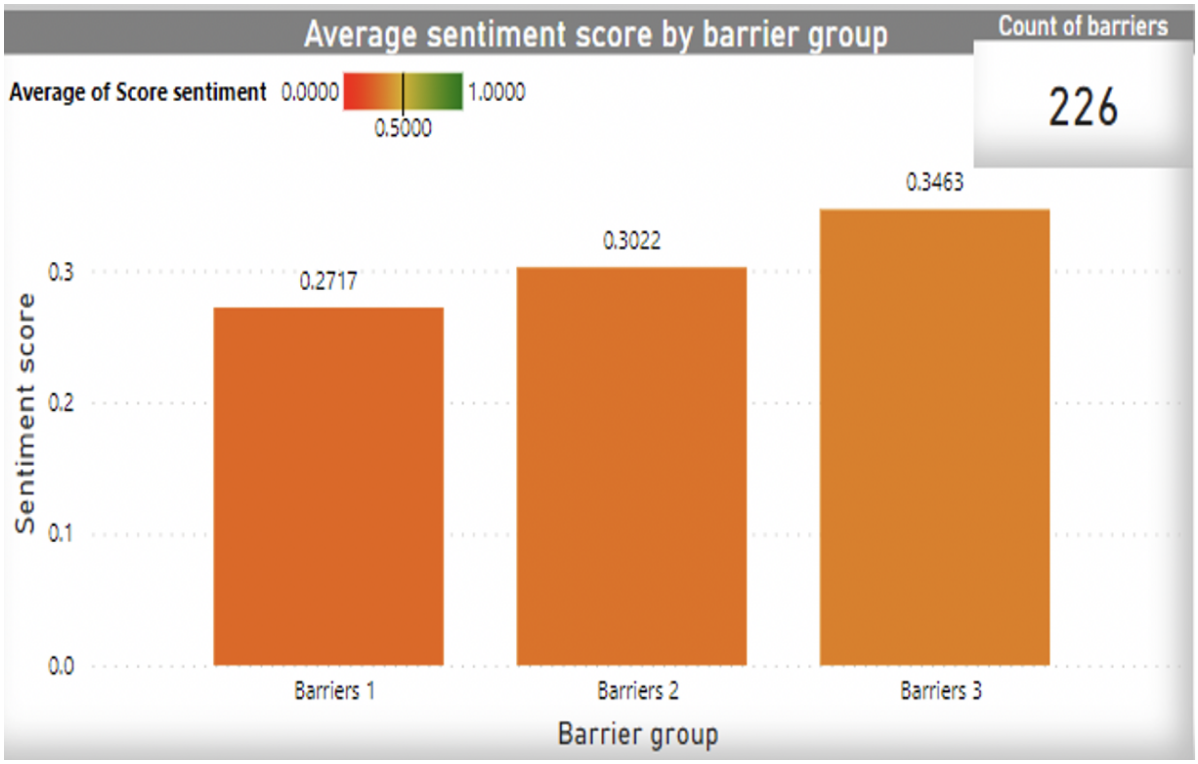

Figure 4.8:5 Sentiment Score: Barriers

The graph below (Figure 4.8:6) shows the barrier score classification. In line with the average sentiment score for barrier group graph above, the negative sentiment is predominant and in line with word cloud and word frequency results

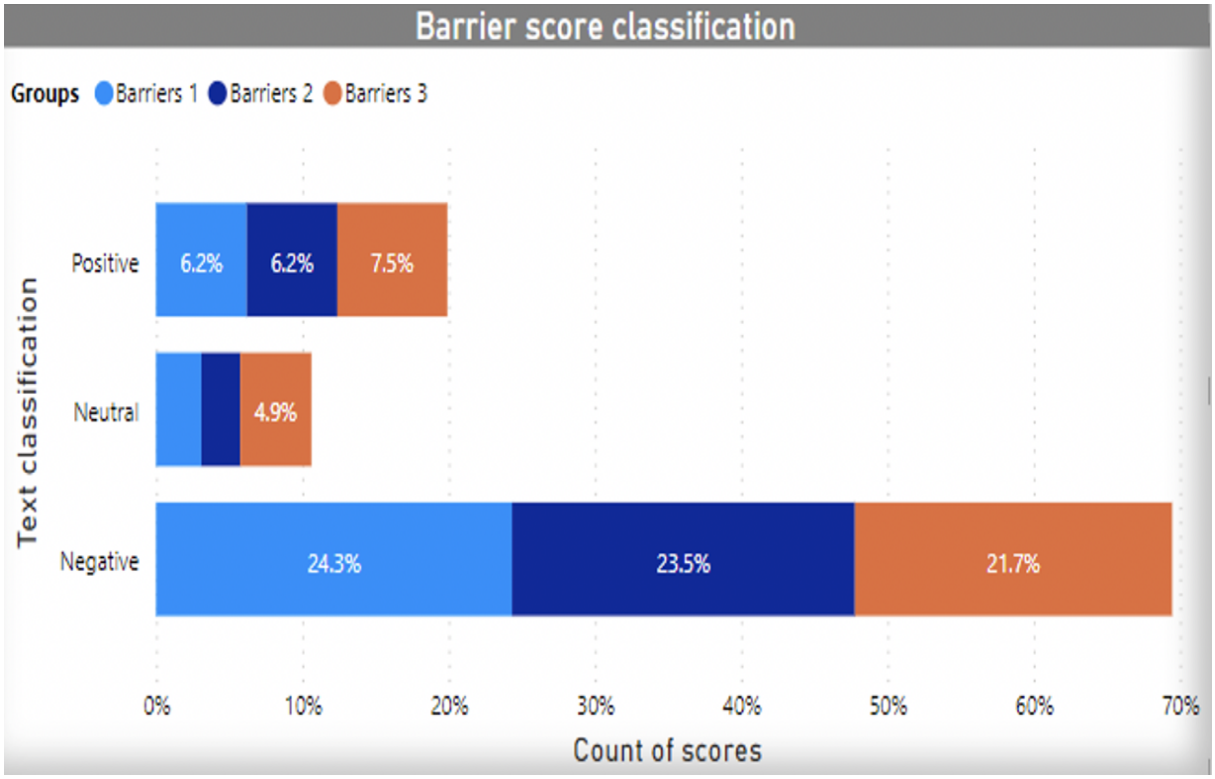

Figure 4.8:6 Barrier Score Classification

4.8.4 *Sentiment Scoring and classification (Enablers)*

Based on the information on average sentiment score by enabler group, the sentiment is positive as it above averaging above 0,75.

This can give insurance companies some reassurance that the enablers highlighted by respondents can be viewed as necessary positive reinforcements needed to drive the adoption and use of insurance technology solutions by customers. Refer to Figure 4.8:7 below.

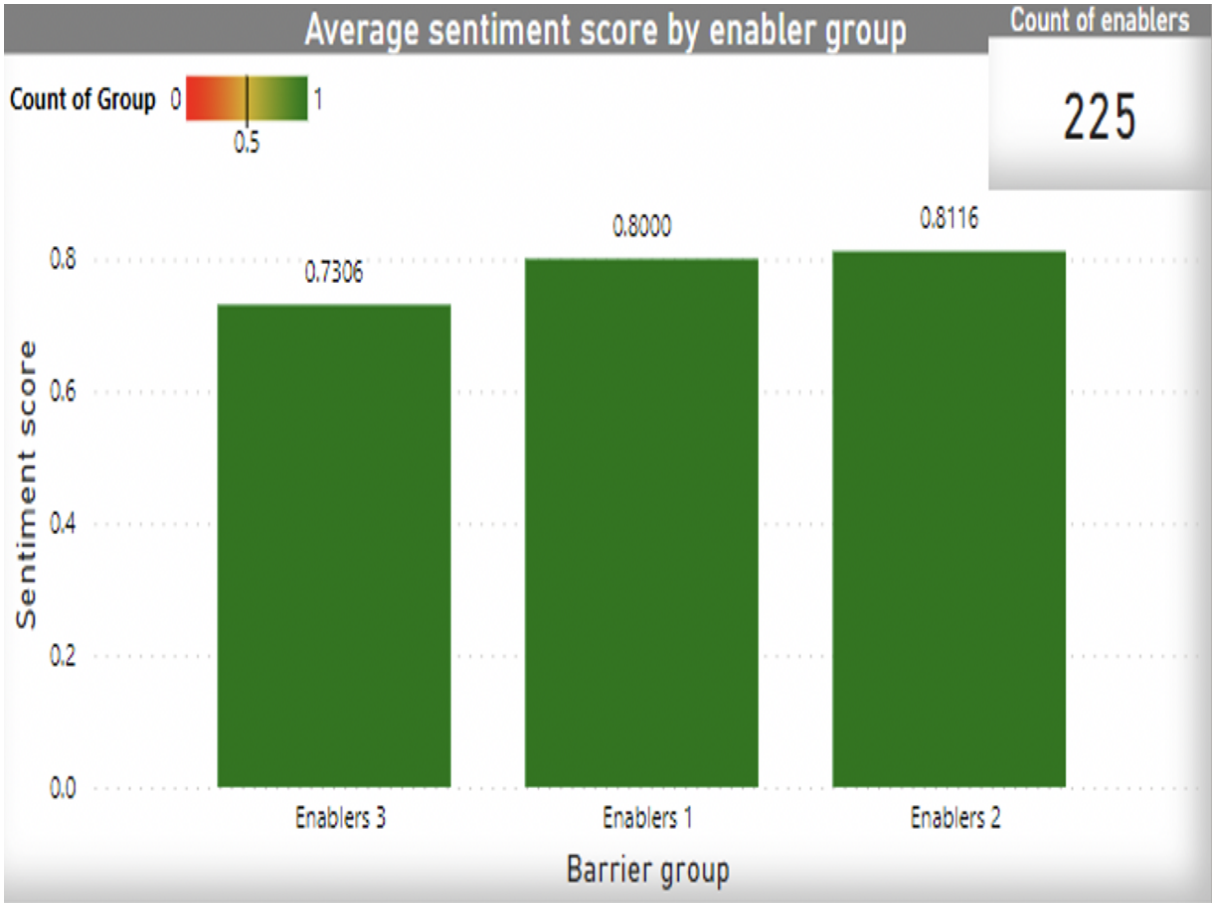

Figure 4.8:7 Average sentiment score by enabler group

The graph below shows the enabler score classification.

In line with the average sentiment score for the enabler group graph above, the positive sentiment is predominant and in line with the word cloud and word frequency results on enablers on insurance technology solutions adoption by customers. Refer to Figure 4.8:8 below.

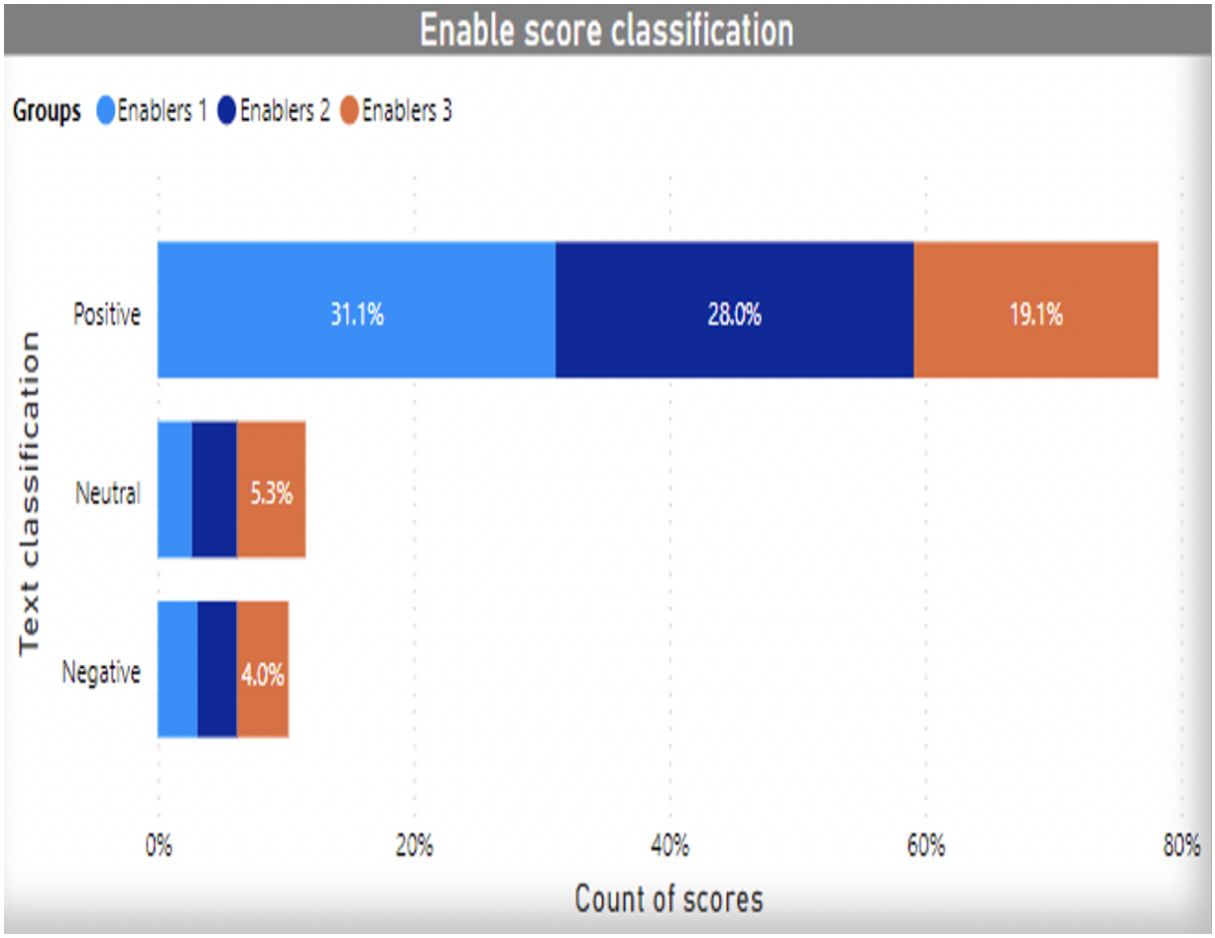

Figure 4.8:8 Enabler score classification

CHAPTER 5. DISCUSSION OF RESULTS AND CONCLUSIONS

5.1 Introduction

This chapter gives an overview of the results, along with findings and recommendations. This research study was intended to understand the factors that influence the adoption of Insurance Technology solutions by customers in South Africa.

5.2 Study Summary

The fourth industrial revolution in insurance was brought about by the introduction of sophisticated software programs and the automation of machinery in the operating environment. The Digital Vortex, which fundamentally changed how several industries conduct business, demonstrated the diverse effects of disruptive technologies (Shan, Wade and Noronha, 2017). The research study emphasizes the advantages of insurance technology solutions for the insurance industry because they may improve various operational areas and lead to cost reductions, better capital allocation, and improved revenue generation (Catlin et al., 2017).

There are differing views on the factors that influence the adoption of Insurance Technology solutions and also where customers would prefer to use the technology as opposed to having an interaction with a human being (Rodríguez Cardona et al., 2019). Most of the studies were conducted in other countries, mainly in Europe, Asia, USA and other African countries (Das & Das, 2020 ; Tian et al., 2020 and Tian et al., 2020).

The examination of factors influencing the adoption and of technologies has made extensive use of the UTAUT model (Venkatesh et al., 2003). Performance Expectancy, Effort Expectancy, Social Beliefs, and Facilitating Conditions are included as independent variables in the model to examine their effects on users' behavioural intentions to adopt technology solutions. The purpose of the research project was to

use the UTAUT model to get perspectives from customers (both insurance product owners and non-owners) about what variables might lead them to choose insurance technology solutions in South Africa.

The research study objectives were as follows:

- To investigate factors that drive Insurance technology solutions adoption by customers using the Unified Theory of Acceptance and Use of Technology (UTAUT).
- Identify how these factors are affected by age, gender, experience, and voluntariness by Insurance Technology solutions customers in South Africa.
- To investigate the barriers to adoption of Insurance Technology solutions by customers in South Africa.
- Investigate the potential preconditions or enablers of Insurance Technology solutions adoption by insurance customers in South Africa.

The research methodology used in this study was quantitative. The research sample included a sizable population, including participants who had purchased insurance through insurance brokers. Some of the population was derived from the Wits Business School post graduate community, the researcher's LinkedIn network and colleagues of the researcher. The population was unknown to the researcher and in most instance the survey link was shared by brokers, Wits Business School and on LinkedIn for anyone to participate.

Purposive sampling technique was employed as part of a non-probability sampling strategy approach. This particular approach was used to target the population most likely to provide responses that are pertinent to the study, useful for collecting data, and knowledgeable about possible insurance technology.

A total of 213 respondents attempted to complete the online survey, although some of the respondents did not complete the entire survey, which led to differing totals against different constructs. All the cases with missing values greater than 50 percent were

not included in the calculation of the inferential statistics. The totals for different constructs were different due to the stated missing values.

The survey was designed as an online-based survey using Qualtrics Survey Software to collect data with a link directing respondents to the online survey. The survey did not exclude respondents who indicated that they do not have experience of insurance technology solutions to get balanced insights between insurance customers and non-insurance customers as well as those with experience in the use of insurance technology solutions and those without experience in the use of insurance technology solutions. The survey data was analysed using SPSS, R-Studio and Microsoft excel. Chapter four of this covered the research results.

The survey results revealed that participants varied in age, with 56 (27,6%) of the respondents between the ages of 31 and 35 and 46 (22,7%) of them being between the ages of 26 and 40. As a result, the respondents between ages of 18 and 40 were the majority (145 participants, or 86,7%).

Of the 202 respondents who indicated their gender, 64 (31,7%) were males and 136 (67,3%) were females. Out of 202 respondents who indicated that they hold an insurance policy or product, 175 (86,6%) had an insurance policy or product and 27 (13,4) had no insurance policy.

Of the 201 respondents who responded to the question on whether they had knowledge of Insurance Technology solutions, 93 (46,3%) of the respondents indicated that their knowledge of Insurance Technology solutions was average, 22 (10,9%) indicated that their knowledge was poor. 78 (38,8%) indicated that their knowledge of Insurance Technology solutions ranged from good to very good.

Of the 201 respondents who responded to the question on whether they had experience in using Insurance Technology solutions, 130 (64,7%) of the respondents indicated that they had experience in the use of Insurance Technology solutions and 71 (35,3%) did not have experience in the use of Insurance Technology solutions.

Based on the above survey results, it is fair to state the results showed a balanced view from an age, gender, insurance product holding and experience in the use of Insurance Technology solutions. The results also showed a split of those with the intention to use the insurance technology solution in the future.

5.3 Research Objective One: factors that drive Insurance Technology solutions adoption by customers using the Unified Theory of Acceptance and Use of Technology (UTAUT).

Using the UTAUT model, it was determined how much each of the four variables; performance expectancy, effort expectancy, social beliefs, and facilitating conditions influence the adoption of technology (Venkatesh et al., 2003). The literature supports the notion that these factors have a favourable influence on behavioural intention to adopt new technological solutions.

The survey results indicated that Insurance Technology solutions could simplify the engagement with an insurer as well save time and money for the customers. This could also have a positive impact on insurance companies. The survey participants indicated that they believe Insurance Technology solutions can simplify their engagements with their insurance service providers, and show willingness to use the technology. The results also highlight the belief that insurance products could be cheaper through Insurance Technology solutions in comparison to buying through an insurance broker.

The responses also highlighted ease-of-use will help the respondents to engage with the insurer and still get affordable quotations in comparison to a broker. This was aligned to the literature, which highlighted perceived ease-of-use as well savings for the insurers, which will in turn lead to savings for consumers (Gharahkhani & Pourhashemi, 2020; Kene-Okafor, 2021; Akinwale & Kyari, 2022).

The study confirms that performance expectancy has an impact on the adoption and use of Insurance Technology solutions by customers. This is contrasted to the results of the study on the acceptance of internet- and mobile-based interventions that complement health care, which also confirmed that performance expectancy was a predictor (Phillippi et al., 2021). Respondents also expect Insurance Technology solutions to save them time while optimising their engagement with insurers. Based on the survey responses, there is an expectation from respondents that Insurance Technology solutions should perform these functions and also help customers to keep their insurance policies top of mind at all times. This is supported by the literature, which highlighted that there is strong relationship between trusting the technology will fulfil its functionality and the intention to adopt the technology as well as perceived usefulness, which looks into the full functions and performance of the intended functions that consumers expect (Ali et al., 2021 and Hasan et al., 2021).

The survey also highlighted effort expectancy as having an impact on the adoption and use of Insurance Technology solutions, indicating that it is necessary to have the skills and confidence to use technology solutions linked to insurance, and a belief that insurance technology solutions could make it easier to understand products and policy information. A study that followed the UTAUT methodology and sought to establish employee acceptance of the technology system in order to increase use of the policy processing system supports the research study's findings. The study's findings showed that employees' behavioural intentions to adopt the technology system were influenced by their expectation of effort (Legowo, 2018). To make sure that their technology is simple to use and comprehend, insurance companies need to invest in ease-of-use.

The language must be simplified for any consumer to understand as opposed to the use of insurance jargon that is only understood by those working in the industry. The view is supported by literature that highlights perceived ease-of-use had a positive impact on customer satisfaction. The findings of a study indicated that the usage attitude is a significant component in determining the satisfaction of customers, and the recognition of the indirect impact of compatibility on the usage attitude as well as

consumer innovation is a second significant factor (Lee et al., 2015 and Shaikh et al., 2020).

The above results highlight that performance of the expected benefits of ease-of-use and perceived usefulness drives acceptance. It emphasized and recognized the importance of general knowledge, awareness and trust in contributing to positive customer adoption of Insurance Technology solutions in South Africa. This was compared and supported by the results of a literature review on two variables (performance expectancy and effort expectancy) applying the UTAUT model as well as general knowledge, awareness and trust (Venkatesh et al., 2003).

The effect of social influence (beliefs) and facilitating conditions on customers' adoption of Insurance Technology solutions lacked significant relationship. In contrast, the findings of a study associated with the UTAUT model revealed that social influence was the most important factor influencing users' behavioural intentions to adopt technology systems. The study also discovered that facilitating circumstances affected users (Legowo, 2018). This contrasts with the study's findings, which indicated that social influence and facilitating conditions had little impact on users' behavioural intentions to adopt the usage of technology systems.

Therefore, to drive adoption and use of Insurance Technology solutions, the following needs to be taken care of by insurance companies:

- Invest in creating awareness, knowledge and trust around the use of Insurance Technology solutions by customers. This can be done through making information available via platforms and adverts to educate customers and give them the necessary confidence to trust the use of Insurance Technology solutions. Insurance companies will need to be intentional and deliberate in investing in this on an ongoing basis while taking consumer feedback into consideration.

- Insurance companies need to continuously invest in ensuring that performance expectancy is met and realised by customers. This requires continuous improvements and investment in the right technology that can meet customer requirements.

- Insurance firms must continually invest while taking client input into consideration to make sure that the technology is easy to use and understand in order to ensure effort expectancy is achieved.

5.4 Research Objective Two: How factors such as age, gender, experience, and voluntariness influences customer adoption of adopt Insurance Technology solutions.

The UTAUT model also examined how respondents' age, gender, voluntariness to use, and experience influenced their acceptance and use of Insurance Technology solutions. Venkatesh's research (Venkatesh et al., 2003) found that the following was highlighted when the UTAUT model was taken into account while evaluating the adoption of new technologies:

- Performance expectancy is strongly influenced by age and gender.
- Effort expectancy is influenced by a combination of age, gender, and experience.
- Social influence is influenced by age, gender, and experience.
- The age and level of experience of the users influence the facilitating conditions.

Age, gender, experience, and voluntariness of use did not significantly affect the adoption and use of Insurance Technology solutions by customers in South Africa, according to the research study's findings.The research study findings from literature reported that age, gender and experience had no moderating effects while another study found that age was a significant mediator of customers' intention to use Internet of Things (IoT) in eHealthcare (Phillippi et al., 2021 and Arfi et al., 2021).

The findings showed that the constructs of performance expectancy, effort expectancy, or facilitating conditions, factors influencing the behavioural intents of South African customers to embrace and use Insurance Technology solutions, are not significantly influenced by age. In contrast, a study from the literature on indicated that the constructs were influenced by age (Arfi et al., 2021).

Gender and independent factors that affect customers' or users' behavioural intention to adopt insurance technology solutions are not statistically correlated. Experience and the independent factors influencing consumers' behavioural intention to embrace insurance technology solutions in South Africa are not significantly correlated with one another.

There is no statistically significant correlation between the voluntariness to use insurance technology solutions and the performance expectations, effort expectations, and social belief constructs that affect customers' behavioural intentions to adopt and use insurance technology solutions in South Africa. This is however contrasted by the results of study on the adoption of patient portals by patients, which found voluntariness of use to be linked to adoption (Wildenbos et al., 2017).

The performance expectations and effort expectancy that influence South African consumers' behavioural intentions to accept the adoption and usage of Insurance Technology solutions have a relationship with the behavioural intention to use those solutions. This is partly supported by the literature, which found performance expectancy to have a significant relationship with behavioural intention, while effort expectancy also showed also showed a relationship, which was not significant (Arfi et al., 2021).

This slightly contradicts the research by Venkatesh et al., 2003, and would recommend a wider sample in the future that would also look at the different market segments as this might have been influenced by the mid to affluent segment amongst the respondents.

5.5 Research Objective Three: Investigate the barriers to adoption of Insurance Technology solutions by customers in South Africa.

The purpose of this research objective was to investigate and identify barriers to Insurance Technology solutions adoption by customers in South Africa. The respondents gave the list of barriers, and they are as follows:

- Respondents highlighted the lack of information as a barrier to Insurance Technology adoption by customers in South Africa, lack of mobile data especially from a South African context where mobile data can be deemed to be expensive. This is supported by a study that aimed to understand barriers to patient portal acceptance and usage by patients, which highlighted limited health literacy, poor facilitating conditions linked to limited technology access, lack of information and knowledge of patient portal existence (Wildenbos et al., 2017).

- Complexity of the technology was also highlighted as a barrier by respondents, which means insurance companies need to remove the level of complexity to make technology solutions easy to understand and use. According to literature, customers' perceptions of the value of adopting the most recent technological advancements that have been affected by banking are diminished by their belief that the most recent technologies will help them satisfy their needs and would be simple to use (Magotra et al., 2018).
- Lack of knowledge around the technologies and products associated with the technology was highlighted as another hinderance to Insurance Technology solutions adoption. The other barriers were online security as well as scams. Insurance companies need to invest more in security but also making sure that their online presence is distinct with branding and links to the technology solutions being made available on key information platforms to ensure trust by consumers. This is supported by the literature, which highlighted online security and privacy issues as concerns that could hinder adoption and use of Insurance Technology solutions by customers (Rodríguez Cardona et al., 2019).

Respondents also highlighted words like cost, accessibility, issues, processes and time etc. as barriers to Insurance Technology solutions adoption by customers in South Africa.

The average sentiment score by the barrier group as well as the barrier score classifications results are well aligned with the information from word cloud and the word frequency graph.

5.6 Research Objective Four: Investigate and identify the enablers to adoption of Insurance Technology solutions by customers in South Africa.

The purpose of this research objective was to investigate the enablers of Insurance Technology solutions adoptions by customers in South Africa. Some of the prominent enablers of Insurance Technology solutions adoption are as follows:

Based on the analysis and word cloud, the respondents highlighted the following to be the enablers of Insurance Technology adoption:

- Easily accessible information is an enabler of Insurance Technology solutions adoption by customers. If insurance companies want to realise an improvement in Insurance Technology solutions adoption by customers, they must ensure the necessary information on their products and technology solutions is easily accessible by customers and potential customers. This can be done through educating existing customers on Insurance Technology solutions available for them to use and highlighting the key benefits should customers adopt and use these technology solutions. This is contrasted by literature, which stated that performance expectancy and voluntariness of use are related to higher education and experience as enablers of technology adoption (Wildenbos et al., 2017).

- Accessible technology is an enabler of Insurance Technology solutions adoption by customers in South Africa. The insurers need to make it easy for

customers to access the necessary technology, including how to use it. This can be done through educating clients and through brand awareness to existing customers and potential customers. Insurance companies also need to continuously review and take feedback from customers regarding accessibility of the technology solutions. This is supported by the literature, which highlights the need to drive awareness and usage of technology (Das & Das, 2020). Ease-of-use is an enabler of Insurance Technology solutions adoption by customers in South Africa. Insurance companies need to invest in making Insurance Technology solutions easy to use by applying simplicity in the front-end functionality for customers while keeping complex and sophisticated functionality for competitive edge etc. This is also supported by the literature, which highlighted perceived ease-of-use to be an enabler of technology adoption by customers (Eltayeb & Dawson, 2016; Gebert-Persson et al., 2019 and Shaikh et al., 2020)

Some of the key words and statements highlighted a need for responsive apps, quick and responsiveness technology, easy to understand language, secure, simple and helps customers to save.

5.7 Conclusion

Based on the study results, there were 130 (64,7%) respondents with previous experience of using Insurance Technology solutions and 129 (64,5%) of the respondents confirmed that they intend using Insurance Technology solutions in the future. Performance Expectancy and Effort Expectancy were significant determinants of whether consumers and potential customers in South Africa adopted and used Insurance Technology solutions, according to the study results of the UTAUT model. General knowledge and awareness were also highlighted as key factors in influencing adoption of Insurance Technology solutions by customers in South Africa.

The findings supported a positive relationship between these variables and South African customers' intentions to utilize Insurance Technology solutions. Age, gender,

experience, and consumer voluntariness of use did not significantly affect these characteristics, according to the UTAUT model. It might be necessary for future studies on the Insurance Technology solutions adoption by South African consumers to conduct further research with more focus on the different market segments and demographics.

The survey responses on barriers and enablers to adoption and use Insurance Technology solutions highlighted the importance of Performance Expectancy and Effort Expectancy as factors influencing the utilisation of Insurance Technology solutions by customers in South Africa. Lack of information and data were highlighted as barriers to Insurance Technology solutions adoption. Other barriers mentioned are complex technology, online scams, security, and lack of knowledge.

Regarding the enablers of Insurance Technology solutions adoption, respondents highlighted that having easily accessible information, accessible technology and ease-of-use are enablers to Insurance Technology solutions adoption by customers in South Africa. The respondents also highlighted other themes like responsiveness of the apps and websites, quickness and responsiveness of the technology, easy to understand language and secure and simple technology as enablers of Insurance Technology solutions adoption by customers in South Africa.

Insurance companies wanting to see growth in the adoption of Insurance Technology solutions by customers in South African need to invest in building and optimising their technology solutions to be customer first.

CHAPTER 6. RECOMMENDATIONS, LIMITATIONS AND FUTURE RESEARCH

6.1 Recommendations

The research study results highlighted that there is a lack awareness about Insurance Technology solutions amongst respondents, as well as about the benefits of using these Insurance Technology solutions to buy insurance, manage existing products as well as in engaging with insurers. The results also highlighted that Performance Expectancy and Effort Expectancy are key to drive adoption based on the respondent's feedback. The results also indicated general knowledge, awareness and trust in the technology solutions provided by the insurance companies to be important factors to be considered if higher adoption and usage rates are to be realised. It is therefore important for insurance companies to identify and implement remedies and solutions that will enable more adoption and usage of Insurance Technology solutions by customers in South Africa.

6.1.1 *Invest in solutions that meet the needs of customers*

It is important for insurance companies to invest resources to get the right technology solutions that are fit for purpose and easy to use by consumers. The solutions need to have a human-first factor, which means the client needs to be put first in the designing of solutions to ensure that all customer needs are catered for. Insurance companies need to ensure that the right solutions are developed for specific needs to avoid investing in solutions that end up not having any use due to customers not seeing the need for use them.

Further, insurance companies must invest in security measures as online security has been viewed to be a barrier to Insurance Technology solutions adoption by customers. As companies invest in technology solutions, they need to get the best solutions but also ensure that the security aspect is communicated to customers to put their mind at ease.

6.1.2 *Accessible and easy to understand information*

Insurance companies need to focus on making sure that information on the technology solutions and the insurance products on the Insurance Technology solutions is easily accessible and that the information is easy to understand. The study found that insurance companies tend to use complex language that ordinary customers would not easily understand, which becomes a barrier for adoption and usage of Insurance Technology solutions. It is therefore important that insurance companies put effort into making product information on the technology solution easy to read and understand without the need for a customer to contact someone to explain the product features, benefits, and charges etc.

6.1.3 *Customer/user experience*

Insurance companies need to ensure that its Insurance Technology solutions and applications are easily accessible by the target customers or audience in a convenient and effortless manner. This is a crucial thing that insurance companies need to do to successfully to drive the adoption of Insurance Technology solutions by customers. It is therefore important for insurance companies to focus on driving improvements linked to effort expectancy to ensure the technology solutions are always easy to use.

6.1.4 *Streamlined underwriting*

Insurance companies need to streamline their underwriting processes to ensure that the process of buying a product is not tedious due to complex underwriting processes. This can be done through integrating different platforms or tools that can easily provide information to customers without infringing on their rights. This will make the process much easier and quicker.

6.1.5 *Awareness of Insurance Technology solutions*

Insurance companies need to make sure they communicate to their customers about use of Insurance Technology solutions to drive awareness and adoption. This can be done through a three-step communication approach as follows:

1. **First communication:** The purpose of the first message should be to raise awareness of any new technology, app, or other initiative that the insurers want their customers to use. This communication is the cornerstone of any adoption effort and is crucial in encouraging the intended audience to investigate new technology solutions.
2. **Second communication:** This communication should inform clients of the advantages of using Insurance Technology solutions and how it simplifies interactions with insurers, including cost savings if the customer purchases insurance online, among other things.
3. **Third communication:** The third communication should concentrate on use cases to identify the customers' problems with the current methods of doing business and indicate how Insurance Technology solutions can address those problems.

It is crucial for insurance companies that want to increase the adoption of Insurance Technology solutions to map the physical and digital movement of target audiences or customers because the medium through which a communication is shared and distributed often plays a more significant role in the success of that communication than its content. Customers can be categorized based on personas, and lookalike audiences can be found. As a result, develop and implement communication campaigns using the appropriate channels, such as the websites and digital applications that they frequent and spend time on. Insurance companies would be able to disrupt their target audiences' routines by doing this since they would be entering into their routine by encouraging them to adopt and use Insurance Technology solutions.

6.1.6 *Appoint change management agents*

Change management agents are especially important when it comes to disseminating change and influencing target audiences to switch to new practices, adopt new technologies, apps, etc. Insurers need to identify change agents and influencers who can drive behaviour change in the communities where they live and work. Financial advisors and insurance brokers can also play a role in the short term if insurers present compelling propositions and financial advisors come to rely on technology solutions. Insurance companies are phasing out services.

6.2 Limitations of the study

This study could not ascertain whether all the survey respondents were based in South Africa. The survey was only accessible to those with means to access it, thus vulnerable groups without technological resources might be excluded from this study. The study only gathered data and insights on questions that participants decided to answer, thus there is a limitation in terms of the responses received. This study was limited to the South African market, although some of the literature reviews may have addressed other markets. This study excludes aggregators within the insurance industry.

6.3 Recommendations for future research

It is imperative to conduct future studies due to the potentially limited focus on this research study. It is necessary for any future studies to get a much bigger population that includes different customer segments in order to get insights that could cover different market segment populations and geographical locations. There could also be a need to further investigate feedback that was given by respondents regarding enablers and barriers to Insurance Technology solutions in South Africa through a qualitative research methodology.

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *organisational behavior and human decision processes*, *50*(2), 179-211.

Akinwale, Y. O., & Kyari, A. K. (2022). Factors influencing attitudes and intention to adopt financial technology services among the end-users in Lagos State, Nigeria. *African Journal of Science, Technology, Innovation and Development*, *14*(1), 272-279.

Ali, M., Raza, S. A., Khamis, B., Puah, C. H., & Amin, H. (2021). How perceived risk, benefit and trust determine user Fintech adoption: a new dimension for Islamic finance. *foresight*.

Arfi, W. B., Nasr, I. B., Khvatova, T., & Zaied, Y. B. (2021). Understanding acceptance of eHealthcare by IoT natives and IoT immigrants: An integrated model of UTAUT, perceived risk, and financial cost. *Technological Forecasting and Social Change*, *163*, 120437.

Baptista, G., & Oliveira, T. (2015). Understanding mobile banking: The unified theory of acceptance and use of technology combined with cultural moderators. *Computers in Human Behavior*, *50*, 418-430.

Baranauskas, G., & Raišienė, A. G. (2021). Reflections on the Customer Decision-Making Process in the Digital Insurance Platforms: An Empirical Study of the Baltic Market. *Applied Sciences*, *11*(18), 8524.

Bhattacherjee, A. (2012). Social science research: Principles, methods, and practices.

Braun, A., & Schreiber, F. (2017). *The current InsurTech landscape: Business models and disruptive potential*. I. VW HSG Schriftenreihe.

Cadenhead, J. M. (2014). *Secured web portal, applications, and solutions: Factors influencing authorized health insurance users' adoption* Capella University].

Cappiello, A. (2020). The digital (r) evolution of insurance business models. *American Journal of Economics and Business Administration*, *12*(1), 1-13.

Catlin , T., Johannes-Tobias Lorenz, Björn Münstermann, & Ricciardi, V. (2017). *Insurtech—the threat that inspires*. Mckinsey. Retrieved 20 May 2022 from

Catlin, T., Lorenz, J.-T., Nandan, J., Sharma, S., & Waschto, A. (2018). Insurance beyond digital: The rise of ecosystems and platforms. *McKinsey & Company*.

Creswell, J. W. (2014). Qualitative, quantitative and mixed methods approaches. In: Sage.

Das, A., & Das, D. (2020). Perception, adoption, and pattern of usage of FinTech services by bank customers: Evidences from Hojai District of Assam. *Emerging Economy Studies*, *6*(1), 7-22.

Davis, F. D. (1989). Perceived usefulness, perceived ease-of-use, and user acceptance of information technology. *MIS quarterly*, 319-340.

Dissanayake, S., Dewasiri, N., Dharmarathna, D., & Karunarathna, K. (2022). Health-related Behavior and Adoption of Mobile Payments in Life Insurance During the Pandemic: Evidence from Sri Lanka. *Asian Journal of Management Studies*, *2*(1), 46-71.

Eltayeb, M., & Dawson, M. (2016). Understanding user's acceptance of personal cloud computing: Using the Technology Acceptance Model. In *Information technology: New generations* (pp. 3-12). Springer.

EY. (2019). Future of distribution in South Africa: the path toward digital solutions.

Ferreira, T. V. V. (2021). *Segmented and bundled solution for mass market insurance consumers: becoming a lifelong partner-an approach to strategy*

Fishbein, M., & Ajzen, I. (1977). Belief, attitude, intention, and behavior: An introduction to theory and research. *Philosophy and Rhetoric*, *10*(2).

Gebert-Persson, S., Gidhagen, M., Sallis, J. E., & Lundberg, H. (2019). Online insurance claims: when more than trust matters [Online insurance claims]. *The International Journal of Bank Marketing*, *37*(2), 579-594. https://doi.org/https://doi.org/10.1108/IJBM-02-2018-0024

Gharahkhani, M., & Pourhashemi, S. O. (2020). Adoption of Mobile Insurance Using TAM: A Case Study. *International Journal of Industrial Engineering and Management Science*, *7*(2), 45-54.

Gidhagen, M., & Persson, S. G. (2011). Determinants of digitally instigated insurance relationships. *International Journal of Bank Marketing*.

Greener, S. (2008). *Business research methods*. BookBoon.

Hasan, R., Ashfaq, M., & Shao, L. (2021). Evaluating Drivers of Fintech Adoption in the Netherlands. *Global Business Review*, 09721509211027402.

Holliday, S. (2019). How insurtech can close the protection gap in emerging markets.

Hong, S., Thong, J. Y., & Tam, K. Y. (2006). Understanding continued information technology usage behavior: A comparison of three models in the context of mobile internet. *Decision support systems*, *42*(3), 1819-1834.

Igbaria, M., Guimaraes, T., & Davis, G. B. (1995). Testing the determinants of microcomputer usage via a structural equation model. *Journal of management information systems*, *11*(4), 87-114.

Jiang, S.-j., Liu, X., Liu, N., & Xiang, F. (2019). Online life insurance purchasing intention: Applying the unified theory of acceptance and use of technology. *Social Behavior and Personality: an international journal*, *47*(7), 1-13.

King, W. R., & He, J. (2005). External validity in IS survey research. *Communications of the Association for Information Systems*, *16*(1), 45.

Lee, C.-Y., Tsao, C.-H., & Chang, W.-C. (2015). The relationship between attitude toward using and customer satisfaction with mobile application services: An empirical study from the life insurance industry. *Journal of Enterprise Information Management*.

Lee, I., & Shin, Y. J. (2018). Fintech: Ecosystem, business models, investment decisions, and challenges. *Business horizons*, *61*(1), 35-46.

Legowo, N. (2018). Evaluation of policy processing system using extended UTAUT method at general insurance company. 2018 International Conference on Information Management and Technology (ICIMTech),

Magotra, I., Sharma, J., & Sharma, S. K. (2018). Investigating linkage between customer value and technology adoption behaviour: A study of banking sector in India. *European Research on Management and Business Economics*, *24*(1), 17-26.

Mandina, S. P., & Matsika, N. N. (2021). Consumer readiness to adopt self-service life assurance products. *British Journal of Management and Marketing Studies*, *4*(1), 45-71.

Mirza, A. A. I., Muhamed, N. A., & Kamarubahrin, A. F. (2021). Islamic Insurtech Conceptual Framework: A Proposal. *Ihtifaz: Journal of Islamic Economics, Finance, and Banking*, *4*(2), 131-143.

Nicoletti, B. (2021). Industry 4.0 and Insurance 4.0. In *Insurance 4.0* (pp. 29-35). Springer.

Olsen, S. (2004). *Instruments for clinical health-care research*. Jones & Bartlett Learning.

Philippi, P., Baumeister, H., Apolinário-Hagen, J., Ebert, D. D., Hennemann, S., Kott, L., Lin, J., Messner, E.-M., & Terhorst, Y. (2021). Acceptance towards digital health interventions–model validation and further development of the unified theory of acceptance and use of technology. *Internet interventions*, *26*, 100459.

Riemer, K., Hafermalz, E., Roosen, A., Boussand, N., El Aoufi, H., Mo, D., & Kosheliev, A. (2017). The Fintech Advantage: Harnessing digital technology, keeping the customer in focus.

Rodríguez Cardona, D., Werth, O., Schönborn, S., & Breitner, M. H. (2019). A mixed methods analysis of the adoption and diffusion of Chatbot Technology in the German insurance sector.

Salkind, N. J. (2010). *Encyclopedia of research design* (Vol. 1). sage.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*. Pearson education.

Shaikh, I. M., Qureshi, M. A., Noordin, K., Shaikh, J. M., Khan, A., & Shahbaz, M. S. (2020). Acceptance of Islamic financial technology (FinTech) banking services by Malaysian users: an extension of technology acceptance model. *foresight*.

Sharma, S. K., & Chandel, J. K. (2013). Technology Acceptance Model for the Use of Learning Through Websites Among Students.

Slazus, B. J. (2022). Factors that influence FinTech adoption in South Africa: a study of consumer behaviour towards branchless mobile banking. *85561451X*.

Tian, X., Prybutok, V. R., Mirzaei, F. H., & Dinulescu, C. C. (2020). Millennials acceptance of insurance telematics: An integrative empirical study. *Tian, Xiaoguang*, 156-181.

VanderLinden, S. L., Millie, S. M., Anderson, N., & Chishti, S. (2018). *The insurtech book: The insurance technology handbook for investors, entrepreneurs and fintech visionaries*. John Wiley & Sons.

Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). User acceptance of information technology: towards a unified view. Manag Inf Syst Q 27: 425–478. In.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS quarterly*, 157-178.

Wildenbos, G. A., Peute, L., & Jaspers, M. (2017). Facilitators and barriers of electronic health record patient portal adoption by older adults: a literature study. *Stud Health Technol Inform*, *235*(235), 308-312.

APPENDIX A: RESEARCH INSTRUMENT

Questionnaire: Using Insurance Technology Solutions

Part A: Details of Participant

Age: 18-25 ☐ 26-30 ☐ 31-35 ☐ 36-40 ☐ 41-45 ☐ 46-50 ☐ 51-55 ☐ 56-60 ☐

60 and above ☐

Gender: Male ☐ Female ☐

Highest Qualifications

Matric ☐ Diploma ☐ Bachelor's degree ☐ Honours degree ☐

Master's degree ☐ Doctorate ☐ Other ☐

Do you have an insurance policy?

Yes ☐ No ☐

Do you currently have a smart phone device?

Yes ☐ No ☐

Do you prefer using your smart phone or computer when shopping online?

Smartphone ☐ Computer ☐

How would you describe your knowledge of Insurance Technology solutions?

Very Poor. ☐ Poor ☐ Average ☐ Good ☐ Very Good ☐

Have you ever used any Insurance Technology solutions?

Yes ☐ No ☐

Have you ever bought insurance

Online?

Yes ☐ No ☐

Would you buy insurance online?

Yes ☐ No ☐

Part B: This part captures the respondents' awareness and attitude, perceived usefulness, effort expectancy, social beliefs, facilitating conditions and behavioural intention for using Insurance Technology solutions. This part will be rated using a 5-point Likert scale which ranges from 1: Completely disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Completely Agree.

B1	**General knowledge and awareness, Attitude and Trust of Insurance Technology by Customers**:	1	2	3	4	5
1	I believe that Insurance Technology solutions can simplify my engagement with an insurer					
2	I would like to use Insurance Technology solutions when I buy or manage my insurance benefits					
3	I would trust any advice or results I get from the Insurance Technology solutions where my insurance policies are concerned.					
4	I feel comfortable using the Insurance Technology solutions to buy or manage my insurance benefits or contracts					
5	I believe my insurance premium would be cheaper if I buy using Insurance Technology solutions instead of a broker or financial advisor.					
6	I believe Insurance Technology solutions can provide me with necessary information and solutions as and when I need it.					
7	I believe that Insurance Technology solutions provide reliable information and solutions I require compared to dealing with a human being.					
8	My insurer is currently using Insurance Technology solutions.					
9	My insurance broker/financial advisor currently uses Insurance Technology solutions instead of manual processes.					

10	I believe Insurance Technology solutions can provide me with the necessary product offering or advice that is more accurate in comparison to that provided by a broker/financial advisor.					
B2	**Performance Expectancy**	**1**	**2**	**3**	**4**	**5**
11	I believe I would save time while using Insurance Technology in insurance.					
12	Insurance Technology solutions would optimise my engagement with an insurer.					
13	Insurance Technology solutions in the insurance industry would help me to maintain policies and benefits and keep them top of mind.					
14	With the use of Insurance Technology solutions, I can benefit financially.					
B3	**Effort Expectancy**	**1**	**2**	**3**	**4**	**5**
15	Insurance Technology solutions like insurance websites and apps are easy to use.					
16	It's easy to learn how to use Insurance Technology solutions like websites and apps.					
17	I have the necessary skills and confidence to use Insurance Technology solutions.					
18	It makes my life easier when I engage with an insurer using the Insurance Technology solutions like websites and apps.					
19	It's easy to understand the products and policy information through Insurance Technology solutions.					
B4	**Social Beliefs**	**1**	**2**	**3**	**4**	**5**
20	My family and friends use Insurance Technology solutions when engaging with their insurers.					
21	My family and friends have bought insurance policies using Insurance Technology solutions (e.g., websites, apps, chatbots)					

22	In my network of friends, there is an expectation that one should use Insurance Technology solutions when engaging with insurers					
23	My insurance broker/financial advisor encourages me to use Insurance Technology solutions like apps, webchats etc.					
24	It's easier to deal with an insurance broker/financial advisor as opposed to using Insurance Technology solutions.					
25	The ability to buy and manage my insurance policies through Insurance Technology solutions gives me a higher status than those who cannot.					
B5	**Facilitating Conditions**	**1**	**2**	**3**	**4**	**5**
26	My insurer promotes the use of Insurance Technology solutions e.g., websites, webchats, and apps etc.					
27	My Insurer's Technology solutions are easy to navigate.					
28	My Insurer's Technology solutions are designed with easy-to-understand language.					
29	My Insurer's Technology solutions caters for my language preferences.					
30	My Insurer's Technology solutions look safe to use.					
B6	**Behavioural Intention**	**1**	**2**	**3**	**4**	**5**
31	I have an intention of buying insurance through Insurance Technology solutions e.g., insurance website or insurance apps.					
32	I have an intention to viewing my insurance policies using Insurance Technology solutions e.g., insurance website or Insurance apps.					
33	I have an intention of adjusting my insurance policies using Insurance Technology solutions e.g., insurance website or Insurance apps.					

34	I want to know more about the benefits of using Insurance Technology solutions.					
35	I do intend on engaging with an insurer through Insurance Technology solutions.					

Part C: This section captures respondents' feedback on barriers and factors that enable Insurance Technology solutions adoption.

C	Insurance Technology adoption barriers and enablers
36	What would be the 3 things that will stop you from using any Insurance Technology solutions? (Complete answers on the 3 spaces provided: 180-word limit on each)
37	What are the 3 things that would enable you to use Insurance Technology solutions? (Complete answers on the 3 spaces provided: 180-word limit on each)

APPENDIX B: ETHICS CLEARANCE CERTIFICATE

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

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

Ethics Clearance Certificate

Ethics protocol number: WBS/DB593852/259
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

Project title	The adoption of insurance technology solutions by customers in South Africa
Investigator / Researcher	Mr Gift Sipho Sibanda
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed anonymity and confidentiality.
Issue Date of Certificate	2022-10-25
Expiry date	Date of submission of the project / research report
Chairperson	Prof Anthony Stacey ☎ +27 11 717 3587 +27 82 880 4531 anthony.stacey@wits.ac.za

Declaration by Researcher

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

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

Signature

26 October 2022
Date:

APPENDIX C: TURNITIN ORIGINALITY REPORT

Turnitin Originality Report

Processed on: 28-Feb-2023 12:57 AM SAST
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Word Count: 26200
Submitted: 1

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The adoption of Insurance Technology solutions by customers in South Africa Student name: Gift Sipho Sibanda Student number: 593852 Student email address: 593852@students.wits.ac.za Contact number :0823027396 Supervisor Dr Teboho Sethibe A research proposal submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business Johannesburg 2023 KEYWORDS Digital adoption, digital platforms, insurance industry, InsurTech, insurance products, UTAUT 1 ABSTRACT This research study investigated factors driving customer adoption of Insurance Technology solutions or InsurTech in the insurance industry and what insurers should do to ensure positive acceptance of Insurance Technology by customers in South Africa. The research used the Unified Theory of Acceptance and Use of Technology (UTAUT) model. This study is essential as incumbent insurance and InsurTech companies have been investing in Insurance Technology solutions to offer affordable insurance solutions at lower operating costs; however, adoption of these technologies by customers remained low. The study used a quantitative methodology and an online questionnaire with 37 questions following the UTAUT model to collect data. This research study focussed on insurance and non-insurance customers in South Africa. A broker and an InsurTech company distributed the survey amongst insurance clients. The respondents were also derived from LinkedIn and the referrals by the network of the researchers. A total of 213 respondents attempted the online survey, although some still needed to complete the entire survey, which led to differing totals against different constructs. In addition, the construct scores were calculated for items with a missing value of less than 50% of the inferential statistics. As a result of the missing values, the sums for the various structures varied. According to the research study's findings, consumers' behavioural intention to utilize Insurance Technology solutions is significantly predicted by two main variables: performance expectancy and effort expectancy. Furthermore, general awareness and understanding, attitude, and trust where highlighted as important predictors. The study's findings highlighted several factors that prevent insurance technology adoption, including a lack of product and technology information, mobile data, internet security, and awareness. The study also found that easily accessible information, 2 accessible technology, and ease-of-use were enablers of Insurance Technology solutions adoption by customers. The study provides more insights into what insurance companies need to focus on to increase customers' adoption and use of Insurance Technology solutions. The study contributes to the body of knowledge and future studies on factors influencing the adoption of customers' adoption of Insurance Technology solutions 3 DECLARATION I, Gift Sipho Sibanda, hereby declare that this research project report is my own work except as indicated in references. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business at the University of the Witwatersrand, Johannesburg. It has not been previously submitted for any degree or examination in this or any other university. Name: Gift Sipho Sibanda Signature Signed at Johannesburg. On the 28th day of February 2023 4 ACKNOWLEDGEMENTS Firstly, I would like to acknowledge and thank my late grandparents, who always taught me about the importance of education and continuous development. Their teachings became the foundation that kept me going. May they rest in eternal peace. Secondly, I would also like acknowledge and thank my beautiful supportive life partner and soon to be wife, Nthabiseng Manamela. Thank you for always encouraging me to go that extra mile and for the support throughout this journey, enabling me to focus on my studies. To my supervisor, Dr. Tebogo Sethibe, thank you for your calm and collected guidance throughout this process. I enjoyed this journey with you. Lastly, thank you to my parents who always taught me to never give up no matter how difficult the road becomes. 5 TABLE OF CONTENTS LIST OF TABLES
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