Analysing key factors considered by consumers before adopting 5G-enabled services in South Africa

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ABSTRACT

With the mainstream deployment of new 5G mobile data technologies and the growing pressures of social influence, linked with the widespread impact Fake news, it is concerning what effect the before mentioned factors have on consumer adoption of 5G-enabled services has been a growing concern.

The main objective of this study was to analyse key factors that consumers consider before adopting 5G-enabled services in South Africa. Value-based adoption model (VAM) was extended to develop a correlational model by adding factors, Social influence, Fake news knowledge to the existing model.

The research model was tested by analysing the results from 140 online respondents by employing structural equation modelling (SEM) technique. The result from the study shows the weak but negative impact that consumer sacrifice has on consumer’s perception of value and ultimately consumer adoption. The impact of social influence was also explored but it found not to be significant. Furthermore the results from the study illustrate the significant relationship between Perceived Value which further influences consumer's intentions to adopt 5G enabled services.

The last part of the study explores the impact that Fake News has on consumer adoption, and the results prove that the higher the consumer's knowledge of the identification of Fake News is, the less effect it has in dampening the positive effect that social influence had on consumer adoption. Results from this study are also contrasted against the results from previous studies, and the impact of the study on practitioners and researchers is discussed.

KEYWORDS

Value-based Adoption Model (VAM)

5G-enabled services

Social influence

Perceived benefit

Perceived sacrifice

Perceived value

Fake news knowledge

User adoption intentions

DECLARATION

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

Name: Jacobus Hercules du Plessis Signature: J.H. du Plessis

Signed at : Centurion, Gauteng

On the 26th day of June 2023

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LIST OF ACRONYMS

3rd Generation Network	3G
4th Generation Network	4G
5th Generation Network	5G
Adoption intension	AI
Dependent variable	DV
Fake News Knowledge	FK
Independent variable	IV
Perceived benefits	PB
Perceived sacrifice	PS
Perceived value	PV
Social influence	SI

DEDICATION

I would like to dedicate my dissertation work to my family. A special feeling of gratitude to my loving grandparents, Koos and Louise du Plessis who supported me through one of my toughest times in my life. To my mother, Marina du Plessis, thanks for all your love and support. Thanks to my loving wife, Magdaleen and my two beautiful daughters, Carli and Marnè for all their words of encouragement and for those special hugs in times of dismay.

KEYWORDS

Consumer adoption

Value-based Adoption Model (VAM)

5G-enabled services

Social influence

Fake news

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF TABLES – APPENDIX B

LIST OF TABLES – APPENDIX C

CHAPTER 1. INTRODUCTION

1.1 Statement of purpose

This quantitative study aims to research how perceived benefit versus perceived sacrifice balances to create the perceived value, which is weighted against social influence, resulting in consumers' intentions of adopting 5G-enabled services in a South African context. The proven value-orientated adaption model (VAM) will also be adapted to include the impact of Social influence in the form of misinformation on the consumer's final intention to adopt the 5G-enabled services. The study will be limited to residents in the economic hub Gauteng province of South Africa.

1.2 Background of the study

The demand for internet usage in the Sub-Saharan Africa region was forecasted to increase by 36% by 2020 (Dumičić, 2019). The latest report the World bank reported that South Africa had more than 100 million mobile subscription in 2020 (World Bank, 2022). The demand for data is driven by the rapid advances in technology rather than changes in the demographics (Oughton, 2018).

To address the capability restraints suffered by the existing 4G mobile network technology development and deployment of 5^{th} generation (5G) technologies is required to build Next Generation Mobile Network (NGMN) to address the increased demand for more data (Parikh, 2020).

Developing countries that invest in telecommunication experience substantial growth dividend within the Organisation for Economic Co-operation and Development (OECD) (Waverman, 2005).

The deployment of 5G technologies was delayed in South Africa due to government considering the implementation of Dynamic Radio Spectrum regulations before the release of frequency spectrum by the telecommunication regulating body ICASA (Olwal et al., 2013).

At the end of 2019 the world saw the release of spectral efficient 5G technologies specifically designed to address the increased demand for higher data rates. This in turn unfortunately coincided with worldwide Covid-19 pandemic that sparked misinformation i.e., “Fake News” circulated via social media platforms that included trending topics related to 5G aiding in the spread of Covid-19 virus (Paraschiv et al., 2021).

The deployment of 5G technology coincided with the COVID-19 pandemic sparked conspiracy talks in social media that was later document in case studies related to the development Fake News detection via new data science models developed by analysing “MediaEval 2020 5G conspiracy dataset” (Pogorelov et al., 2021).

The temporary assignment of spectrum follows a directive to ICASA in March of 2020 from the Minister of Communications to release spectrum to meet the unprecedented demand for bandwidth with the COVID-19 lockdown in an aim to address widespread digital exclusion within South Africa during the country's lockdown (Gillwald et al., 2020).

These temporary spectrum rules have overshadowed the Authority's hearings on the licensing of the International Mobile Telecommunications (IMT), which were scheduled for April 2020. With the inability to release high demand spectrum for more than a decade, the pace with which access to interim spectrum was granted was welcomed as it had been dealt with prompting with hopes of the impending assignment of high demand spectrum being accelerated, since it will be a critical stimulus in the restoration of the economy following COVID-19. The spectrum auction was scheduled to be concluded by the middle of 2022, with the wholesale open-access network (WOAN) license to be completed in 2023 (Gillwald et al., 2020).

With the long-awaited release of frequency spectrum required for the deployment of mobile 5G technologies in South Africa, it is imperative for telecommunication providers to understand what drives consumers adoption of new services to achieve mainstream user adoption (Tamawa, 2022). More research is required to better understand the balance between factors that consumers consider before

adopting 5G-enabled services as other studies show delayed adoptions of 5G services due to lack of need or high adoption cost (Kyuho Maeng, 2020). It is imperative to understand how prospective consumers balance the benefits acquired by the adoption of 5G-enabled services versus the cost of subscribing to the respective 5G-enabled service, similar to the adoption of mobile internet (Kim, 2007), mobile payments (Shelvia, 2020) and IoT based home automation (Kim, 2017).

Finally, user adoption can also be affected by social influence in the form of “Fake News” that always mimics the look and feel of real news and can be classified into six main categories, News Satire, News Parody, News Fabrication, Photo-Manipulation, Advertising / Public relations and Propaganda (Tandoc et al., 2017).

The user’s level of Fake News Knowledge directly impacts a user’s intent to share Fake News stories (Paraschiv et al., 2021).

Summary of reviewed research studies

Research articles based on the proven Value Adoption Model (VAM) were reviewed that contained key constructs such as Perceived Benefit, Perceived Value, Social Influence and Adoption Intent as presented in Table 1-1.

Table 1-1: VAM based research studies

<table>
<tr><td colspan="3">Shah, S. K., Zhongjun, T., Sattar, A., & XinHao, Z.</td><td colspan="3">Shelvia, O., Prayitno, A. T., Kartono, R., & Sundjaja, A. M.</td><td colspan="3">Chloe K. H. Lau ,Chi Fai Raymond Chui & Norman Au</td><td colspan="3">Hee-Woong Kim, Hock Chuan Chan, Sumeet Gupta</td></tr>
<tr><td colspan="3">2021</td><td colspan="3">2020</td><td colspan="3">2019</td><td colspan="3">2007</td></tr>
<tr><td colspan="3">VAM</td><td colspan="3">VAM</td><td colspan="3">VAM</td><td colspan="3">VAM</td></tr>
<tr><td colspan="3">Consumer's intention to purchase 5G: Do environmental awareness, environmental knowledge and health consciousness attitude matter?. Technology in Society, 65, 101563.</td><td colspan="3">Analysis of factors affecting Consumer’s continuance intention to use mobile payments with a value-based adoption model (Vam) approach. Psychology And Education, 57(9), 2883-2898.</td><td colspan="3">Examination of the adoption of augmented reality: a VAM approach, Asia Pacific Journal of Tourism Research,Volume 24, 2019 - Issue 10</td><td colspan="3">Value-based Adoption of Mobile Internet: An empirical investigation, Decision Support Systems,Volume 43, Issue 1,Pages 111-126,ISSN 0167-9236</td></tr>
<tr><td>Perceived Benefits</td><td rowspan="2">Perceived Value</td><td rowspan="4">Adoption Intention</td><td>Perceived Benefits</td><td rowspan="4">Consumer's Continuance Intention to use mobile payments</td><td>Usefulness (Benefit)</td><td rowspan="4">Precieved Value</td><td rowspan="4">Adoption Intention</td><td>Usefulness (Benefit)</td><td rowspan="4">Precived Value</td><td rowspan="4">Adoption Intention</td></tr>
<tr><td>Perceived Sacrifices</td><td>Perceived Sacrifices</td><td>Enjoyment (Benefit)</td><td>Enjoyment (Benefit)</td></tr>
<tr><td>Environmental Knowledge</td><td rowspan="2">Health Consciousness Attitude</td><td>Convenience</td><td>Technicality (Sacrifice)</td><td>Technicality (Sacrifice)</td></tr>
<tr><td>Environmental Awareness</td><td>Social Influence</td><td>Captivating (Inputs)</td><td>Perceived Fee (Sacrifice)</td></tr>
</table>

Furthermore, research papers employing the Technology Acceptance Model were reviewed that also contained key constructs such as Perceived Benefit,

Perceived Value, Social Influence, and Intent to use / attitude towards as presented in Table 1-2.

Table 1-2 : TAM based research studies

Al-Maroof, R. S., Akour, I., Aljanada, R., Alfaisal, A. M., Alfaisal, R. M., Aburayya, A., & Salloum, S. A.		Lee, J., Kim, J., & Choi, J. Y.				Akbari, M., Rezvani, A., Shahriari, E., Zúñiga, M. A., & Pouladian, H.			Cheng, L. K., Huang, H. L., & Yang, S. Y.		
2021		2019				2020			2021		
TAM		TAM				TAM			TAM		
Acceptance determinants of 5G services. International Journal of Data and Network Science, 5(4), 613-628.		Demand forecasting for the 5G service market considering consumer preference and purchase delay behaviour. Telematics and Informatics, 47, 101327.				Acceptance of 5 G technology: Mediation role of Trust and Concentration. Journal of Engineering and Technology Management, 57, 101585.			(2021). Attitude toward 5G: The moderating effect of regulatory focus. Technology in Society, 67, 101795.		
	Gender	Age / Income / Gender							Promotion Focus		
Perceived Skill Readiness	Intension to use 5g	Social Interaction	Perceived Enjoyment	Attitude	Intension to use 5g	Perceived ease of use	Trust	Intention to use 5g	Privacy	Attitude towards 5g	Word of Mouth
Perceived Usefulness		Strength of the Social Ties	Perceived Usefulness			Perceived usefulness	Concentration (Focus)		Speed		
Perceived Ease of Use			Perceived Ease of Use						Ubiquity		Willing to Pay
Perceived Enjoyment									Subjective Norm		
Perceived Resources											

From the litratrure review it was noted that the VAM model is better suited to this research study as it has previously been employed to investigate consumer adotion intention of new services over already accepted technologies.

1.3 Research problem

With the accelerated demand for mobile data in South Africa driven by new bandwidth intensive services like gaming and mobile video streaming service a next generation Radio Access network is required to be able to support consumers increased mobile data demands. To best understand consumer adoption of the next generation 5G-enabled services it would be required to research the impact that new factors like Perceived Value, Social Influence affects consumer Adoption intend and how consumers level of Fake News Knowledge can dampen the positive influence that Social Influence and Perceived Value has on consumer Adoption intension.

1.4 Research Questions

What factors do South African consumers consider before adopting next generation 5G-enabled service?

How does consumers understanding of Fake News affect their adoption of 5G-enabled services?

1.5 Research objectives

Main objective: The main objective of the study would be to analyse factors that may influence the user adoption of 5G-enabled services in a South African context.

- **Sub objective 1:** Explore how the South African consumer balances perceived sacrifice versus perceived benefits to generate a perceived value leading to consumer's intent to adopt, through the use of the Value-based Adoption Model (VAM).
- **Sub objective 2:** Adapt the existing VAM model to further study the extent consumer adoption intent can be affected by social influence or influences by the consumers understanding of Fake News.

1.6 Rationale

From the literature review it was identified that there was a real impact of Social Influence exerted on consumers to adopt new technologies like 5G Radio Access Networks (Jtde & Pugh, 2019). Furthermore the value that new technologies offer consumers is also a key factor considered by consumers during the adoption of new mobile based service as researched by Kim et al. (2007). Literature also highlighted the powerful impact that Fake News can have on consumer adoption on new technologies and how during the COVID-19 pandemic, directly impacting consumers adoption of 5G Radio Access Technology (Pogorelov et al., 2021). Fake news was able to go viral through user created content published over popular social media platform, this led (Apuke & Omar, 2020) to investigate how

consumers level of Fake News Knowledge prevented the sharing of Fake News articles.

To gain a deeper comprehension of the elements that stimulate consumer of 5G-enabled service, this study proposes to investigate consumer's intent to adopt 5G-enabled services based on the perceived value derived by balancing the perceived sacrifice versus the perceived benefits in a South African context. The aim is to extend academic research that has already been conducted on adoption of services like Mobile internet (Hee-Woong Kim, 2007), Mobile payment (Shelvia, 2020) and IoT for smart home service (Kim, 2017) to consumer adoption of 5G-enabled services in a local South African context.

Secondly, it is required to investigate how new factors like Social Influence via digital channels can positively impact adoption intention by adapting the already proven VAM model to explore user adoption of new 5G-enabled services (Shelvia, 2020). In addition it is also required to examine how the consumers level of Fake News Knowledge can change consumer adoption of 5G-Enabled Service (Apuke & Omar, 2020).

1.7 Delimitations of the study

I. This study will assume that user have access to 5g service via relative handset technology.
II. This study will only focus on consumer 5G adoption use cases and will not consider commercial or industrial use case.
III. This study will not consider consumer's perception of the environmental impact of 5G technology.

1.8 Definition of terms

Third generation (3G)

The third generation of wireless mobile telecommunications technology (3G) launched in Japan in 2001 and included key features like high-speed packet access (HSPA) and high-speed download packet access (HSDPA). Applications of 3G included Video on demand (VOD), Global Positioning System (GPS),

Location-Based Services (LBS), Mobile TV (MTV) and Video conferencing (VC) as reviewed by (Ezhilarasan, 2017).

Fourth generation (4G)

The fourth generation of wireless mobile launched in 2010 by the mobile operator Telia Sonera with the main difference being access methodology of data transfer “Anytime” and “Anywhere”. Applications for 4G was mainly focused on higher data transfer rates while enabling users to transfer media files while being in an active call (Ezhilarasan, 2017).

Fifth generation (5G)

The fifth generation of wireless mobile networking was created to provide quality of experience (QOE) for a projected 50 billion devices by 2020. Application of 5G networks would include, Virtual vision and navigation, Personal admittance, Tele-geo-processing, Management of crisis, Health care assistance, virtualized homes, Smart cities, industrial support and education (Ezhilarasan, 2017).

1.9 Assumptions

It is assumed that all respondents will be able to access and complete the online survey as they would already be familiar with the use of URL links to redirect them to the site where the online survey is hosted.

It is assumed that all respondents will be familiar with mobile cellular devices and capabilities as mobile cell phone penetration is very high in South Africa.

It is assumed that all respondents will be familiar with social media platform like Facebook and twitter and have a basic understanding related to the term Fake News and what it stands for.

1.10 Chapter Outline

Chapter 1 provides the background to the proposed study and includes the problem statement and research objectives that motivated the investigation as

well as information about the study's relevance and the contribution the study makes.

Chapter 2 gives a clear understanding of the basic constructs of independent variables like Perceived benefits, Perceived sacrifice and the exploration of how Perceived benefits and Perceived sacrifice generates Perceived value for the consumer. The construct for Social Influence analysed and the positive influence Perceived value has on consumer Adoption intentions is explored. Exploration of topics related to the study subjects like social media, 5G enabled services and Fake News are reviewed in context of the research objectives. This will be followed by the review of previously used research models TAM, ECM, and VAM and how they have been applied in previous studies. Further analysis of possible best suited research model resulting in the proposed research model and hypothesis development-based relations between identified variable from the literature review.

Chapter 3 depicts the methodological approach and describes the perspectives and topic that influences the research objectives. The research design, research instrument, sampling methodology, sample size, statistical assumptions, reliability / validity, and data collection procedure are also explained.

Chapter 4 starts off by reviewing the sample characteristics, including gender age and education levels against that of similar studies reviewed as part of the literature review section. Next the reliabilities of the employed scales are reviewed before they are employed in the Confirmatory Factor Analysis. Next, the proposed CFA model fit results are reviewed, as specific items were removed from scales to improve the model fit. The reliabilities of the adapted scales were reviewed to ensure internal reliability. The chapter then covered the design and model fit of the new Structural Equation model and its respective model fit. After good model performance was confirmed the results from the structural equation calculations is then interpreted and the finding is reported in relation to the previously stated hypothesis.

Chapter 5 firstly assesses the demographics of the sample group and discusses the possible implications of similarities or differences from other reviewed studies.

The chapter then move on the discuss the findings from this study versus the results from other studies and adding more context and insight or implications these results have for consumer adoption of 5G-enaled service in a South African context. Next the chapter addresses implications in terms of theoretical and practical aspects of the study. The chapter then proceeds to close off with the limitation, suggested future research and the conclusion.

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

In this chapter we explore the understanding of related topics and the basic constructs that would form part of the study. This will be followed by the review of previously used research models and how they have been applied in previous studies. Then the proposed research model will be presented and explained. Key aspect of the proposed model will then be analysed in detail followed by analytical framework and the conclusion with the proposed hypothesis.

2.1 Topics related to the study

2.1.1 *5G enabled services*

5G enabled services can be defined as over the top service that make use of the advanced technical capabilities of next generation 5G radio access providers. These can be divided into five categories are used to group various 5G services based on end users' experiences, immersion, intelligent, omnipresent, autonomous, and public services (Zikria et al., 2018).

The subscriber base has accelerated dramatically since mobile communications were first developed, speed, and user experience quality (QoE). According to Ericsson's forecasts for mobile data traffic worldwide will reach 160 exabytes (160,000,000,000,000,000,000 bytes) per month by 2025 (Cerwall et al., 2016). Cerwall et al. (2016) showed how six billion people were expected to use mobile data on smartphones and other linked devices. According to Cisco's Visual Networking Index (VNI), there will be 5.3 billion internet users, 29.3 billion networked devices, and 14.7 billion machine-to-machine (M2M) applications, respectively, by 2023 (Cisco, 2020).

Next generation 5G would have a variety of enhanced features that would offer solutions for common issues. When 5G is fully deployed it will provide massive capacity, enhanced throughput, and extra low latency than current 4G mobile communications platforms. As a result, vastly advanced services and

applications can be adapted and integrated in the wireless environment (Erunkulu et al., 2021).

According to industry reports 5G-enabled services can be grouped into, 5G-enabled experiences (Real-time AR multiplayer gaming, VR entertainment, Smart Stadiums, Fixed Wireless access, Real-time translator) and Impulse buying / business class plans (5G Booster tickets and 5G Premium service) would be key focus areas for 5G consumer adoption (Grijpink et al., 2021).

2.1.2 *Social media*

Kaplan and Haenlein (2010) defines social media as “a group of internet-based applications that build on the ideological and technological foundations of Web 2.0 , and that allow the creation and exchange of User Generated content.

The clear role of social media in modifying the psychological behaviours of internet users and assisting them in making purchase decisions, thus adding economic value to consumer-business marketing relations (Hutter et al., 2013).

Businesses employ platforms for the sharing of user-generated material to support the attributes and application of brand-related goods and services with a hidden message of brand value to enhance consumers lifestyles or address more specialised demands.

They join a group or actively participate in discussions in groups that are devoted to a certain type of information about a good or service, including product reviews, user testimonials, or behaviour after a purchase. Cheema and Javed (2017) asserts that the sharing of user-generated material on Web 2.0 has facilitated the establishment of several prospective social networking websites, such as Facebook, Wikipedia, or LinkedIn, that offer numerous advantages to online users. Such a social effect can significantly alter how people feel about using online social media.

2.1.3 *Fake news*

Fake news can be defined as news appropriates that has the appearance and feel of legitimate news (from the way websites seem to the way articles are written to the way images have credit lines) is a theme that unites these classifications and under the guise of authenticity, fake news assumes legitimacy by seeming to be authentic news (Tandoc et al., 2017).

Fake news is not new, and a classic example of widespread misinformation can be found as far back as 1938, when an adaption for radio of H.G. Wells' drama The War of the Worlds terrified an almost one million people after listeners interpreted it as factual news of a Martian invasion during a time when citizens main source information was the via newly adopted radio broadcasts (Cantril, 2014). With the digitization of information, the definition of news is now being challenged. Social media platforms provided a platform where user generated content can reach millions of people and resulting in citizens producing journalistic post that would also include news (Robinson & DeShano, 2011).

Reviewing earlier research on the topic of fake news identifies six major types, news satire, news parody, fabrication, manipulation, advertising, and propaganda (Tandoc et al., 2017).

Wardle and Derakhshan (2017) consider fake news to be part of a more extensive framework of misinformation and disinformation. While misinformation is defined as "the inadvertent sharing of false information", disinformation is defined as "the deliberate creation and sharing of false information" (Wardle & Derakhshan, 2017).

The intentionally creation deceptive and unintentionally inaccurate or misleading information (disinformation and misinformation) sparked a technology-enabled epidemic in digital news that was spread via social media (Rubin, 2019).

2.2 Definition of Key Constructs

In the next chapter we will explore the specifics related to the key constructs involved in this study. These key constructs comprises of Perceived Benefits,

Perceived Sacrifice, Perceived Value, Social Influence, Fake News and 5G enabled services.

2.2.1 *Perceived benefits*

Extrinsic and intrinsic subsystems are used to categorize motivations in the Cognitive Evaluation Theory (Deci, 1971). Intrinsic motivation denotes the execution of a task for no obvious reinforcement supplementary to the act of executing the task itself, whereas extrinsic motivation denotes the performance of a task to attain a specified objective or reward (Davis et al., 1989).

Perceived value and behavioural intention have been found to be influenced by both extrinsic and intrinsic factors (Rogers, 1995). Furthermore, it was proposed that customers' evaluations of products included cognitive and emotive components (Dube-Rioux, 1990). The advantages provided by technology, products, or services are referred to as perceived benefits (Shin, 2009).

2.2.2 *Perceived sacrifice*

Customers make constant sacrifices when making the final purchase decision, owing to the abundance of competitive products and services available in almost every category. What is given up in order to obtain a goods and services is referred to as a perceived sacrifice (Grewal et al., 1998a; Zeithaml, 1988).

Perceived sacrifice can be both monetary such as the cost to acquire a product (Yang & Peterson, 2004) and non-monetary considerations such as time, search costs, and physical effort (Pura, 2005).

2.2.3 *Perceived value*

According to consumer behaviour theory, perceived value is "the consumer's overall assessment of the utility of a product or service based on perceptions of what is received and what is given" (i.e., the compromise between perceived benefits and perceived costs) (Zeithaml, 1988).

There is a positive relation between consumer's perceived quality and the perceived acquired value a product offers. There also exist a negative relation between the advertised price and the perceived acquired value of the product (Shukla, 2010).

2.2.4 *Social influence*

In this sense, social exchange captures how an individual thinks about a particular relationship, examining the relational input vs output, the sort of connection they feel they deserve, and the prospect of having better alternatives. In essence, social exchange theory states that relationships are constructed on possible outcomes, based on the concept that one's objective is to reward and the cost of the reward. (Schutz, 1961).

2.2.5 *Adoption intention*

Kim, Chan, and Gupta (2007) proposed a VAM model that was based on the cost-benefit paradigm in behavioural decision theory and claimed that people's intentions to adopt new technology are determined by their perception of its value as determined by the cognitive trade-off between the benefits and sacrifice related to technology use. Usefulness and enjoyment were among the items with perceived benefits, whereas technicality and perceived cost were seen to be sacrifices.

Strong linkages between societal factors, individual creativity, and the usefulness and usability of something was revealed by structural equation analysis, which in turn positively influenced adoption intentions (Lu et al., 2005).

2.2.6 *Fake News Knowledge*

Apuke and Omar (2020) performed research to identify how users of social networking sites (SNS) share social media post related to fake news pertaining COVID-19 information. The analysis was based on perceived herd, SNS dependency, information-seeking, and para social interaction Topics 5G enabled services. A new scale was created to measure users' knowledge related to the

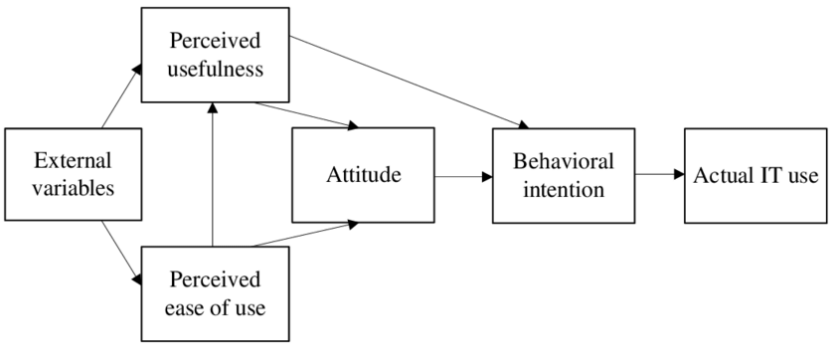
identification of key attributes that would give an indication that the specific social media post would most probable be a fake news article. This new scale was labelled as Fake News Knowledge and was employed to assess how the user's level of Fake News Knowledge moderates their intent to share a social media post related to COVID-19.

2.3 Theoretical Background

2.3.1 *Technology Acceptance model (TAM)*

The Technology acceptance model (TAM) developed by (Davis, 1985) suggest that perceived usefulness and perceived ease of use are the important determining factors continued used of new information systems, see Figure 2-1. The TAM model does well to overcome the limitation of the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975) including user's belief factors of Perceived ease use and perceived usefulness. The TAM model has been widely tested and proven to be a robust to explain the acceptance of new Information systems (Alshammari, 2020).

Figure 2-1: Technology Acceptance Model (Davis, 1985)

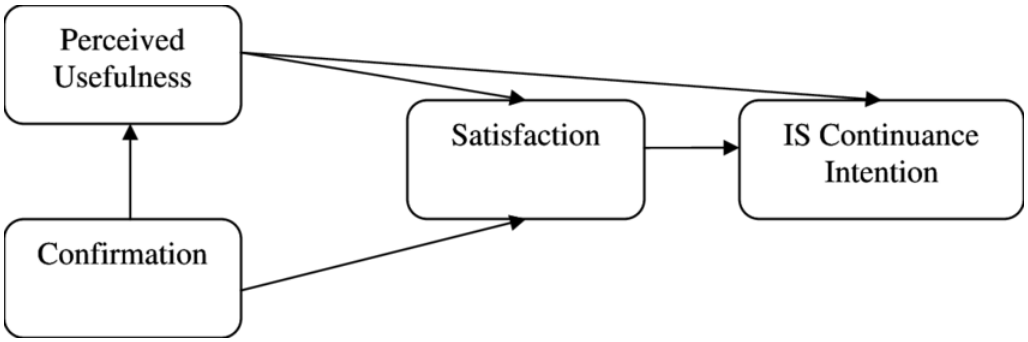


The TAM model in its original form can be considered as general theory, thus requiring further extension before clear behaviour of user's acceptance of new technologies can be analysed. The believe factors perceived ease of use and perceived usefulness are also susceptible to influence from external factors (Alshammari, 2020).

2.3.2 *Expectation-Confirmation Model (ECM)*

The Expectation-Confirmation Model (ECM) model, as shown in Figure 2-2, was used to prove the theory that consumer's intend to continue to use new information technologies was based on satisfaction, conformation and post-adoption consumer behaviour measured using the construct of perceived usefulness (Bhattacherjee, 2001).

Figure 2-2: Expectation-Confirmation Model (Bhattacherjee, 2001)

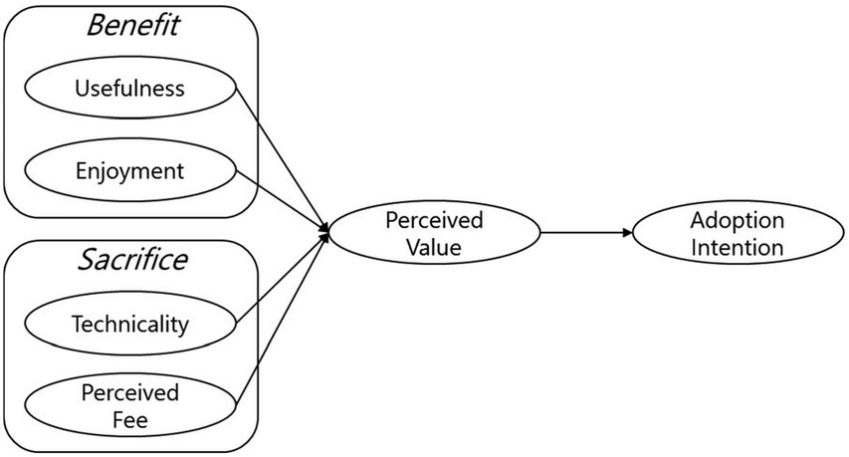


The ECM model is useful in measuring their satisfaction and their perception before and after adoption. The main downside from the ECM model is that factors related to sacrifices are not considered in the as part of perceived value (Shah et al., 2021).

2.3.3 *Value-based adoption model (VAM)*

The Value-based Adoption model, shown in Figure 2-3, was proposed by (Kim et al., 2007) as an alternative to the TAM model proposed by (Davis et al., 1989) to better understand how consumers perceive elements of sacrifices and benefits combine to create an consumer's sense of perceived value that leads to user adoption of new services based on already accepted technologies.

Figure 2-3: Value-based Adoption Model (Kim et al., 2007)



The Value-based Adoption model was successfully used to examine the adoptions of new Information and communication Technology (ICT) services like Mobile Internet (M-Internet), which is a new service based on and already accepted technology, i.e., mobile telephones (Kim et al., 2007).

The VAM model was successfully adapted to analyse key factors that contribute to the continued use of mobile payments services and the element of social influence was added to the model as it cannot be separated from the perceived benefits and perceived sacrifice with (Apuke & Omar, 2020; Shelvia et al., 2020).

2.4 Proposed research model

Kim et al. (2007) claimed that the previous TAM proposed by Davis et al. (1989) was limited in explaining the acceptance of new ICT, and that new ICT users should be recognized as consumers as opposed to just technology users. The TAM is more focused on understanding the adoption of new technology. The VAM model differs from the associated TAM and ECM models as the focus is more on understand the consumer adoption of new services based on already socially accepted technologies (Kim et al., 2007). See overview in Table 2-1.

Table 2-1: c (Kim et al., 2007)

	TAM	ECM	VAM
Subject	Individuals	Individuals	Individuals
Individual Focus	Part of an organisation	Technology consumer	Service based consumer

	TAM	ECM	VAM
Subject	Individuals	Individuals	Individuals
Environment	New information system E.g., word-processing, spreadsheets etc.	New information technologies	New ICT technologies E.g., M-Internet, IOT for home use and Mobile banking
Key features of model	Adoption of new ICT for work use. Organization instigates the adoption. The cost of mandatory adoption.	The ECM model is useful in measuring their satisfaction and their perception before and after adoption.	Adoption of new ICT for Personal use. Individual instigates the adoption. The cost of voluntary adoption.
Limitation of model	Does not consider personal sacrifice. Not able to measure post adoption sentiment.	Does not consider perceived sacrifice as part of the perceived value.	Not able to measure post adoption sentiment.

Since the inception of the VAM conceptual model by Kim (2007) to measure the trade-off between, perceived benefits and perceived sacrifice to form the perceived value that consumers experience to positively lead into user adoption of new M-Internet over previously accepted mobile telephone technology. The VAM model was also successfully used to evaluate the adoption IoT smart home services (Kim et al., 2017) as well the use of the study pertaining to the possible use of Augmented reality (AR) in the booking process for cabins on luxury cruise liners (Lau et al., 2019). The VAM model was also adapted to investigate how the role of consumer's health-conscious attitude counters the perceived value of 5G and how it impacts user adoption intend (Shah et al., 2021). Furthermore, the VAM model was adapted by (Shelvia et al., 2020) to include construct of social influence into the VAM model to evaluate user adoption of mobile payment services based on accepted mobile telephone communication technology.

Considering the above-mentioned use of the VAM model and that this study designed to explore and better understand the main factors that affect consumer adoption of 5G-enabled services and not per say the adoption of the 5G technology, it is proposed to also make use of the proven VAM model for the proposed research.

The VAM research model will be expanded to consider social influence of so-called fake news channelled to consumers via social media platforms.

2.5 Perceived value driving adoption of 5G-enabled services

This study intends to make use of the already proven Value-orientated adoption model (VAM) to best understand how South African how consumers would balance perceived benefits and perceived sacrifice to create the concept of perceived value for the consumer that should drive intent to adopt new 5G enabled services.

Extrinsic and intrinsic subsystems are used to categorize motivations in the Cognitive Evaluation Theory (Deci, 1971). Intrinsic motivation focuses more on the execution of the task itself without expecting any specific reward. Different from intrinsic, extrinsic motivation is the performance of any given task for the sake of achieving a set goal (Davis et al., 1989). Perceived value and behavioural intention have been found to be influenced by both extrinsic and intrinsic factors (Rogers, 1995). Furthermore, it has been proposed that customers' evaluations of a product comprise of both cognitive and emotive components (Dube-Rioux, 1990). The advantages provided by technology, products, or services are referred to as perceived benefits (Shin, 2009).

2.5.1 *Perceived benefits and Perceived value*

Recent research on the adoption of technology has determined that the optimum benefits are those that increase speed, dependability, availability, and accessibility, as well as quality, pleasure, and enjoyment (Helander & Khalid, 2000; Russell, 2018). The purpose of 5G is not merely to improve productivity or profitability. Customers can also enjoy a variety of entertainment activities through it, such as high-quality internet films, social networks, music, and games (Grewal et al., 1998b). Researchers discovered that positive attitudes toward using particular technologies are positively influenced by superior service quality, time savings, enjoyment, and entertainment. (Liao et al., 2007).

2.5.2 *Hypothesis 1*

$H1_a$ – The perceived benefits of 5G-enabled services will positively impact the perceived value of these services.

2.5.3 *Perceived sacrifice and Perceived value*

Perceived sacrifice consists of both monetary and nonmonetary (Thaler, 1985). Monetary spending includes the product's actual price, and it is typically measured based on customers' perceptions of the actual price paid. Non-monetary costs typically include time, effort, and other unsatisfactory spending for the product's purchase and consumption. In South Africa the key factor would relate to financial considerations, specifically the general consumer view related to high data prices and no prospect of price reductions (Mothobi, 2017). It is proposed that perceived cost to be a key component that impacts negatively on consumers sense of perceived value.

2.5.4 *Hypothesis 2*

$H2_a$ - The perceived sacrifice of 5G-enabled services will negatively impact the perceived value of these services.

2.5.5 *Perceived value and Adoption intention*

Given their resource constraints, customers attempt to maximize utility or satisfaction, given the economic theory of utility. This is represented in Kim (2007) definition of perceived value, which compares benefits with sacrifices and therefore can be seen as an indicator of adoption intention. Thaler (1985) proposed model of consumer choice is a combination of economic rational and cognitive psychology. The role of value is psychological in nature and has taken the place of the utility function in economic theory. The fundamental idea of the value function is that it is quantified by balancing perceived gains and losses versus some natural reference point, implying that individuals respond to logical comparisons rather than absolute values, and that the impact of losses is more than it is for gains, indicating that the pain of sacrifice exceeds that of the benefit.

It was shown that transaction utility predicts purchasing intent and behaviour (Urbany et al., 1997). Despite the lack of research on the connection between perceived value and adoption intention, there is considerable empirical proof that perceived value influences perceived intent to use (Sweeney et al., 1997).

2.5.6 *Hypothesis 3*

$H3_a$ - The perceived value of 5G-enabled services will have a positively effect on adoption intention of these services.

2.5.7 *Moderating effect of Fake News Knowledge on Perceived Value and Adoption intention*

In a study by Castellini et al. (2021) it was proven that consumers stopped buying gluten based and dairy based products based on Fake News (in the form of misinformation) resulting in consumers deviating from scientifically proven health standards. Furthermore Apuke and Omar (2020) conducted research on the moderating impact of Fake News Knowledge, discovering that a substantial understanding of fake news consistently reduced social media users' inclination to share fake news articles across various platforms.

Based in the research of (Apuke & Omar, 2020; Castellini et al., 2021) it is proposed that an increased level of Fake News Knowledge dampens the positive effect that Perceived Value has on Adoption Intension.

2.5.8 *Hypothesis 4*

$H4_a$ – Increased level of Fake News Knowledge dampens the positive effect that Perceived Value has on Adoption Intension.

2.6 Impact of social influence on consumer adoption intent

Adapting the existing VAM model to also further study to what extent consumer adoption intent can be affects by social influence.

2.6.1 *Social influence and Adoption intention*

Subjective norm refers to perceived societal pressure to engage in a specific behaviour (Ajzen, 1985). According to Hsu and Lu (2004), various theories show that social impact is particularly essential in moulding user behaviour. Social influence as the amount to which customers believe that key people in their lives, such as friends and family, propose that they must utilize related technologies (Venkatesh et al., 2012). The influence of group references can simply describe what someone will do in response to a specific behaviour (Fishbein & Ajzen, 1975).

2.6.2 *Hypothesis 5*

$H5_a$ - The social influence (behavioural intent and subjective norms) will positively relate to the adoption intention of these services.

2.6.3 *Moderating effect of Fake News Knowledge on Social influence and Adoption intention*

Because online social networks have become important sources of information for potential voters, a new technique in an attacker's inventory is to exert control through social influence, such as propagating Fake News and other types of misinformation via online social media (Wilder & Vorobeychik, 2017). Apuke and Omar (2020) measured the moderating effect of Fake News Knowledge and found in all cases that high level of Fake News Knowledge had a dampening effect on social media users to share fake news articles on social media platforms. Based on the studied by (Apuke & Omar, 2020; Wilder & Vorobeychik, 2017) it is expected that an increased level of Fake News Knowledge amongst consumers will dampen the negative effect that Fake News have 5G-related service adoption and thus have an positive effect on consumers adoption intension.

2.6.4 *Hypothesis 6*

$H6_a$ - Increased level of Fake News Knowledge dampens the positive effect that Social Influence has on Adoption Intention.

2.7 Analytical Framework

The analytical framework is an integrated overview of your study's theoretical and empirical concepts.

2.7.1 *Theoretical Framework*

Consumption can be classified as epistemic, functional, emotional, social, and conditional value. Depending on the situation one or all of the five consumption values can impact the consumption experience (Sheth et al., 1991).

This study will focus on the conditional value and social aspects and how they may affect the adoption of 5G enabled services.

2.7.2 *Conceptual Framework*

This section details the proposed conceptual research model that was develop from the literature review and theoretical theory that was critically review in the preceding chapter.

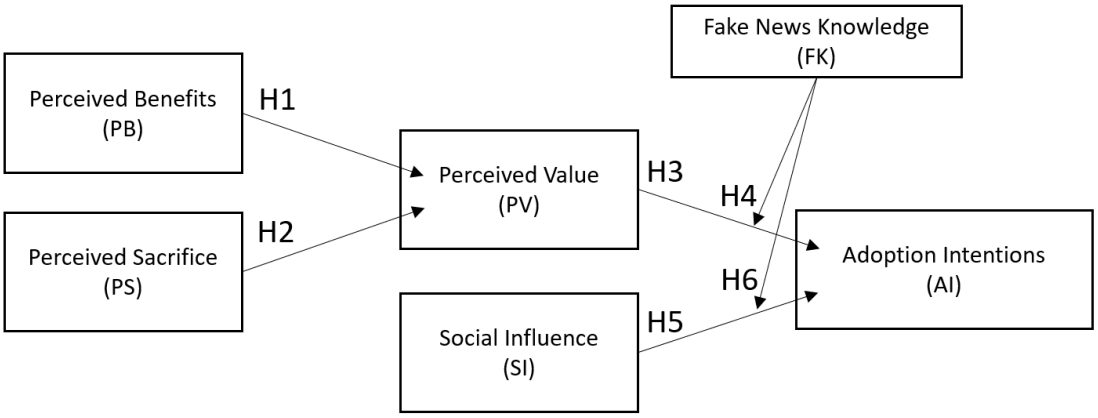
The following independent variables was used as a foundation of the study, Perceived Benefits (PV), Perceived Sacrifice (PS) and Social Influence (SI). From previous studies it has been identified that Perceived Benefits (PB) and Perceived Sacrifice (PS) are constructs that are considered by consumers to create a sense of Perceived Value (PV), (Kim et al., 2007; Lau et al., 2019; O. Shelvia et al., 2020; Y. Kim et al., 2017 & Shah et al., 2021).

In previous research there has been a positive relation between the dependent variable Perceived Value (PV) and consumer Adoption Intentions (AI) and they will be tested in a South African context and specifically related to 5G enabled services to verify that should consumers believe that 5G enabled services offers

good value they would intend to adopt these services (Kim et al., 2007; Lau et al., 2019; O. Shelvia et al., 2020; Y. Kim et al., 2017 & Shah et al., 2021).

The independent variable Social Influence (SI) has been proven to have a positive relation to Adoption Intentions (AI) in the adoption of mobile payment solution in studies by (Shelvia et al., 2020) and will be research in a South African context specifically related Social Influence (SI) exerted by the Fake News phenomenon channelled to consumers via social media platform to consumers and how it affects Adoption Intension (AI) of consumers.

Figure 2-4: Conceptual framework (Author constructed)



2.8 Conclusion of Literature Review

From the literature review there is projected exponential growth of connected devices, as well as data consumption. The only way to cater for this exponential growth is to deploy the 5th generation of radio access network technology that promises to deliver on the ability to connect billions of consumers at gigabit speeds. The deployment of 5G networks would not just provide benefits in the form of higher speeds and better users experience but will also drive down cost due to the spectral efficiencies embedded in the 5G principal design. Hence 5G should provide more benefits like, gigabit download speeds, better quality of service, great use experience (Perceived Benefits) to consumers at a lower cost / price (Perceived Sacrifice) creating value for consumers (Perceived Value) that should drive consumer adoption (Adoption Intent).

Social media platforms removed previous barriers give citizen-based reporters access to a much wider audience resulting Fake News being distribute at such scale that academics are comparing spread of Fake News to a pandemic. The level of social influence (SI) that Fake news, distributed via social media channels, exerted on consumers consideration to adopt new technology is balanced against perceived value (PV) that could result in the consumers adoption intention (AI) being altered.

2.8.1 *Hypothesis 1*

$H1_a$ - The perceived benefits of 5G-enabled services will positively impact the Perceived Value of these services.

2.8.2 *Hypothesis 2*

$H2_a$ - The perceived sacrifice of 5G-enabled services will negatively impact the Perceived Value of these services.

2.8.3 *Hypothesis 3*

$H3_a$ - The perceived value of 5G-enabled services will have a positively effect on adoption intention of these services.

2.8.4 *Hypothesis 4*

$H4_a$ – Increased level of Fake News Knowledge dampens the positive effect that Perceived Value has on Adoption Intension.

2.8.5 *Hypothesis 5*

$H5_a$ - Social Influence will positively relate to the Adoption Intention of these services.

2.8.6 *Hypothesis 6*

$H6_a$ - Increased level of Fake News Knowledge dampens the positive effect that Social Influence has on Adoption Intention.

CHAPTER 3. RESEARCH METHODOLOGY

This section's goal is to discuss the methodological strategy used for the research process. The following major methodological ideas will be covered in this chapter: research approach, research design, data collection methods, population and sample, research instrument, data collection procedure, data analysis and quality assurance to ensure validity and reliability of the intended research instrument.

3.1 Research philosophy

Management philosophies in business and management research can be divided into five mayor philosophies: Pragmatism, postmodernism, interpretivism, positivism and critical realism (Saunders et al., 2019).

Considering the fact that consumer adoption of 5G-enabled service has practical consequences as a result of consumers ideas and real if experiences, there a research philosophy of pragmatism would be in this study.

3.2 Research theory development

There are three approaches to theory development, namely deductive, inductive and abductive (Saunders et al., 2019). Deductive approach constitutes the testing of a known theory. The intent of an inductive approach is to employ known premises to generate new untested results. Lastly, abductive approach is the testing of known premises to produce testable results (Saunders et al., 2019).

The adoption of mobile data services have been researched successfully in countries like China and Malaysia (Chong et al., 2010; Shah et al., 2021).

Inductive approach will be used in research theory development to research known premesis of consumer adoption, but in the new context of South African consumers, to generate new untested results.

3.3 Research approach

Looking at understand the mass adoption of 5G enabled service by consumers in general a quantitative research approach would be best suited to understand how the key factors related to perceive value to leads to positive adoption intend is formed by the consumers balance of perceived benefits versus the perceived sacrifices. With the growing pressure exerted by social media information stream exerting social influence on consumers a quantitative approach would be required to collect research data from a large as possible data sample. This approach has been successfully utilized in recent 5G consumer adoption research by (Shah et al., 2021).

3.4 Research methodology

Quantitative studies aim to capture the characteristics of a population by drawing conclusions from the wider spectrum of a sample, rather than in-depth insights from a small sample of the population. Quantitative testing is done on hypotheses and generalizations about the results are based on the validity of the design and the representativeness of the sample (Pamela, 2019).

3.5 Research strategy

In the study pertaining the acceptance of 5G technologies, Al-Maroof et al. (2021) surveyed almost 518 from Iran and the USA in quantitative study to better understand the mediation role of trust and Concentration. Summarily (Shelvia et al., 2020) survey 306 consumers of Mobile banking investigate how perceived benefits, perceived sacrifice, convenience and social influence will influence continued use of mobile banking services.

Because the research strategy, like the above-mentioned studies, is to better understand the factors considered by consumers influencing the main steam adoption intent a broader sample is required and hence a quantitative approach will be employed and making use of online survey gauge consumers perceptions.

3.6 Time horizon

Furthermore, Field (2009) states that surveys are the best and most widely utilized methods for quantitative research and also has the benefit of collecting primary data in a short space of time. Due to time constraints the online survey will be use a cross-sectional sample or “snapshot” for 3 months allowed for data collection.

3.7 Data collection

Data collection will be done via online survey questionnaire hosted on the online Qualtrics platform and accessed via URL link that can be accessed online or via mobile device. The Qualtrics platform hosted questionnaire in not just easily accessible via URL link but also has responsive user interface that adapts the layout to users accessing it via a smart mobile device. To achieve reliable data as large as possible sample size would be required and distributing the survey via e-mail and social media platforms would aid respondents to quick and easily complete the survey. Collected data can then also be easily exported from Qualtrics to the IBM SPSS platform data analytics.

3.8 Population and Sample

Aspects pertaining the Population and Sample is discussed in detail within the next section.

3.8.1 *Population*

Lack of infrastructure can be a major obstacle for consumer adoption due to the lack of infrastructure, but in cities like Beijing in China, this is not an issue as telecommunications companies invest heavily in deploying new technologies like 5G in these populist cities, making consumers in this area the key population that would adopt new 5G technologies (Shah et al., 2021). Like China telecommunications providers in South Africa has also the majority of their 5G coverage in the major cities located in the Gauteng province, making consumers

in this area a key part of research population. Population parameters are brief characteristics pertaining to the population that are of interest (Pamela, 2019).

The population, as listed in Table 3-1, will be consumers that have 5G capable devices, stays in a 5G coverage geographical are and has already adopted 5G services. Demographical information like, gender, age, education level and average household income will also be collected as some these could potentially influence the research results.

Table 3-1: 5G Population Parameters adapted from (Pamela, 2019).

Population Parameter of Interest	Data Level	Measurement Scale
Gender	Nominal	Male, Female, No-binary
Age group	Nominal	18-24, 25-35, 36-40, 41-55,56-90
Education level	Nominal	High School, Diploma, Degree, Postgraduate Degree, Master's degree
Monthly income in ZAR	Nominal	< 10k, 10k-25k, 25k-40k, 40k +
Consumers with 5G capable devices	Nominal	Yes, No
Consumers that have 5G Radio coverage	Nominal	Yes, No
Consumers make use of 5G Services	Nominal	Yes, No

Due to the POPI act of South Africa, access to consumer data is restricted and it would not be possible define the exact population since access to personal data is restricted.

3.8.2 *Sampling method*

Pamela (2019) explained that probability sampling is a very controlled way of sampling and has the benefit of being a very precise and can even report precision estimates after sampling is completed.

Nonprobability sampling is much more abstract and subjective whereas there would still be a selection criteria applied in the sample selection methods, causation should be taken not to exclude responses based inherent barrier like access to the internet. (Pamela, 2019)

Due to the restrictions placed on the protections of personal information's act (POPIA) there is not possible to clearly define a sampling frame and therefore nonprobability sampling will be employed in this quantitative study.

For the proposed study convenience sampling method will be employed relying on participants to refer others that also fit the sample population criteria required for the research study, i.e., Consumers with 5G capable devices that have 5G Radio coverage and make use of 5G Services.

Therefore a schema would be added to ensure that credible data would be collect from sample group that has first-hand experience of research topic being investigated as proposed by (Pamela, 2019).

Due to the fact that only 3 months is allotted or data collection it was decided to employ convenience sampling method due to the benefit of getting more responses easily (Pamela, 2019).

3.8.3 *Sample*

In this study an online research instrument was created with built-in controls to not allow participants to continue with the survey if they did not have access to 5G Mobile radio coverage, had a 5G capable device and was using 5G currently. This control ensured that respondents was directed to the end of the survey if they did not meet the sample population.

The survey was shared via online business networking platform LinkedIn and from the 694 followers of my LinkedIn profile, and reshared biweekly for the course of 3 months and 206 responses was collected from the survey request.

The online survey was distributed by the registrar of the WITS university to students via there register student e-mail address. The survey was only distributed once, and 175 new responses was received after the e-mail contain the link to the online survey was distributed.

There were 381 respondents that completed the online survey, that met the criteria of having 5G coverage, owned a 5G devices and was making use of 5G-

enables services. Not all the data collected from the 381 respondents could be used. There were 226 entries that had incomplete data mainly due to respondents abandoning the survey. There was also 13 responses that indicated they don't have 5G coverage in their area and 2 respondents stated that they don't have access to a 5g capable device. The researcher was left with a sample size of 140 after all the screening and cleaning of the data set.

When it comes to nonprobability sampling it does not allow for sampling error to be estimated (Lohr, 2021) and in Calder et al. (1981) framework he also urged researchers to always use probability sampling or nonprobability sampling that delivered heterogeneous samples.

Heterogeneity of sample

The gender distribution from the sample of 140 individuals 63.6% was male, 35.0% was female and 1.4% preferred not to disclose their gender. The responses from the 140 individuals were evaluated to assess their level of education. From the result it was clear that 7.1% of respondents had a High School education, 13.6% obtained a Diploma, 25.7% graduated with a degree and 33.6% managed a Postgraduate Degree. From the 140 responses only 20.0% had education at the level of a master's degree and higher.

The heterogeneity of the sample aligns with the theory of Reynolds et al. (2003) that proposes that nonprobability sampling is acceptable to in theoretical research where the sample attributes are heterogeneity.

3.8.4 *Sample size*

Missing data from the 381 responses was limited to respondent abandoning the survey and not completing all the questions and 205 responses was deleted as they did not meet the sample frame. Another 14 response had to be removed due to responses have more than ten percent missing values (Little & Rubin, 1989).

Anderson and Gerbing (1984) proposes that a minimum sample size of 100 is required for Structural Equation Modelling (SEM) statistical analysis. Furthermore a minimum sample size for the use SEM is N = 100-150 as proposed by various

authors (Anderson & Gerbing, 1988; Ding et al., 1995; Tabachnick & Fidell, 2001; Tinsley & Tinsley, 1987).

3.9 Research instrument

Proven and reliable scales was identified from related studies that employed the VAM theoretical model and used scales relative to the underlying constructs that needs to be used in this study to address the research objectives. Please see the full survey questionnaire in Appendix A.

Table 3-2: Employed scales (Author adapted from various Authors)

Question No.	Ref. Code	Constructs	Author
Perceived Benefits			
Q.8	PB1	To my knowledge, 5G-enabled services are faster.	(Shah et al., 2021)
Q.9	PB2	To my knowledge, 5G-enabled services are of higher quality.	
Q.10	PB3	To my knowledge, 5G-enabled services offer excellent user experience.	
Q.11	PB4	To my knowledge, 5G-enabled services are useful.	
Perceived Sacrifices			
Q.12	PS1	I believe that the cost of a 5G capable handset would be high.	(Wang & Wang, 2010)
Q.13	PS2	I believe that the access fee for using 5G-enabled service would be high.	
Q.14	PS3	I am convinced in general that 5G-enabled services would cost me allot of money.	(Shah et al., 2021)
Q.15	PS4	I am convinced that 5G-enabled services will waste time.	
Perceived Values			
Q.16	PV1	To my knowledge, the sacrifice of paying for the use of 5G-enabled Service is value for money.	(Sirdeshmukh et al., 2002)
Q.17	PV2	Taking into account all the benefits and drawbacks, I believe that using 5G-enabled services is advantageous to me.	
Q.18	PV3	Even though 5G services are new to me, the use of these services is worth-while.	
Q.19	PV4	Overall I get good value from the use of 5G-enabled services.	
Adoption Intention			
Q.20	AI1	In the future, I plan to use 5G-enabled services.	(Davis, 1985)
Q.21	AI2	In the future, I intend to use 5G-enabled services.	
Q.22	AI3	In the future, I can see myself making use of 5G-enabled services.	
Social Influence			
Q.23	SI1	People that are important to me are likely to recommend using 5G-enabled services.	(Koenig-Lewis et al., 2015)
Q.24	SI2	People that are important to me would probably that I should make use of 5G-enabled services.	
Q.25	SI3	People that are important to me would expect me to make use of 5G-enabled services.	
Q.26	SI4	People important to me think that I should make use of 5G-enabled services.	
Q.27	SI5	It is expected that people like me would make use of 5G-enabled services.	
Q.28	SI6	People that influence my actions believe that I should utilize 5G-enabled services.	
Fake News Knowledge			

Question No.	Ref. Code	Constructs	Author
Q.29	FK1	I consider news articles about 5G that lack a source to most likely be false.	(Apuke & Omar, 2020)
Q.30	FK2	If title of a news report on 5G does not match the content, it is most likely misleading.	
Q.31	FK3	Some people share unverified information about 5G to boost post views.	
Q.32	FK4	I believe that certain 5G news is designed in order to bring harm and disorder to society.	
Q.33	FK5	Sometimes headlines about 5G on social media are presented in a misleading fashion.	

Both independent and dependent variables were measured using a 7-point Likert continuous scale ranging from strongly disagree = 1 to strongly agree = 7.

The seven-point Likert scale offers more alternatives and therefore increase the likelihood that you will find something that matches the objective reality of individuals. As a 7-point scale exposes more information about the motif, it practically appeals to the participants' "faculty of reason" (Joshi et al., 2015).

In usability studies focused on discrete multipoint scale data, findings indicate that the mean difference significantly correlates with observed significance levels more than the median difference does. This suggests that, for these scales, the mean might be a more effective measure of central tendency than the median. Additionally, the results highlight a stronger correlation between observed significance levels and mean differences in 7-point scales compared to those in 5-point scales (Nunnally, 1978).

Prior studies and scales from previous questionnaires were used to shape the construction of the questionnaire (Apuke & Omar, 2020; Davis et al., 1989; Koenig-Lewis et al., 2015; Shah et al., 2021; Sirdeshmukh et al., 2002; Wang & Wang, 2010).

Scales from previous were employed to achieve a particular level of reliability because they had previously been examined and found to have acceptable Cronbach alpha values. They have met the standards for reliability (free of random or unstable error) and validity (construct validity, content validity, and criterion-related validity), but have not been verified in the South African context (Pamela, 2019).

3.10 Procedure for data collection – Very specific

This study will make use of the online Qualtrics.com platform to capture and summarize the data for further processing. The online survey questionnaire will be open from January 2023 to April 2023. The link to access the online questionnaire will be distributed by email to all respondents and will include an informed consent acknowledgement question. The survey will also include a section to urge respondents to answer the questionnaire honestly and to the best of their knowledge.

Survey was distributed via professional business networking platform LinkedIn and business connections. The survey was also distributed via the registrar of the University of Witwatersrand.

3.11 Data screening and analysis methodology

The IBM statistical package for social scientists (SPSS V24) and Analysis of Moment Structure programme (AMOS V28) is widely by scientist worldwide to statistical analysis package that include functions like CFA and SEM (Ong & Puteh, 2017). These are simple to use software tools that do not demand any special abilities and produce clear results (Field, 2013). As previously stated, this section concentrates on outlining how the data analysis was conducted and what significant aspects were considered when making statistical conclusions.

The data must be cleaned after it was entered into Qualtrics to verify its integrity. Screening the data for mistakes, coding, completeness was all part of the data quality control procedure. After that, it was exported to SPSS and evaluated for missing data and violations of multivariate statistical assumptions (Field, 2013). The data was next examined for missing values, violations of multivariate analysis, validity, and reliability testing, and finally the statistical procedures utilized for hypothesis testing.

3.11.1 *Missing values*

This section examined various approaches of handling missing data. Missing data is a common issue in surveys, which may result from data collection procedures or other survey-related problems, for example, lengthy questionnaires, online survey platform availability, respondents using their right to not answer questions that could be interpreted negatively (Field, 2013).

In this study an online research instrument was created with built-in controls to not allow participants to continue with the survey if they did not have access to 5G Mobile radio coverage, had a 5G capable device and was using 5G currently. This resulted in respondents being directed to the end of the survey if they did not meet the sample population. Respondent that did meet the sample population criteria was allowed to continue the survey if they so wished not to answer a specific question to allow for more respondents completing the survey.

Missing data from the 381 responses was mostly limited to respondent abandoning the survey and not completing all the questions. It therefore the following actions were required to analyse patterns in the collected data, delete incomplete responses and replace some missing data as proposed by (Rubin, 1976).

Firstly the listwise deletion was performed on the 205 of respondents that did not meet the sample population (Consumers with 5G capable devices that have 5G Radio coverage and make use of 5G Services.)

Secondly a further listwise deletion was performed on 65 respondents that had more than ten percent missing values (Little & Rubin, 1989).

The remaining 140 responses had 10 case that had missing values and was analysed to determine if missing values were missing not at random (MNAR), missing completely at random (MCAR) or missing at random (MAR).

Data are said to be missing completely at random (MCAR) if their absence is unrelated to any values or potential values for any of the variables (Howell, 2008).

On SPSS, the Little's missing completely at random (MCAR) test was run, see Appendix B, Table 1-5. The p-value for the test's output was (Chi-Square = 133,809, DF = 150, Sig. = ,824) and as a result, there was evidence of values missing completely at random (MCAR), however it was not statistically significant as the $p > 0.05$ (Howell, 2008).

Missing values was replaced using linear interpolation using SPSS. (Collier, 2020). Finally SPSS Missing Value Analysis (MVA) was performed to confirm that no more missing values exist in the collected data.

While confirming that there are no longer any missing data, Appendix B - Table 4 & Appendix B - Table 5, suggested there might be a problem with extreme values. The following part discusses the crucial requirement that data must not deviate from any statistical assumption prior to doing any statistical analysis.

3.11.2 *Statistical assumptions*

Structural Equation Modelling (SEM) and Confirmatory Factor Analysis (CFA) are closely related statistical techniques, and they share common assumptions due to their underlying similarities. The key assumptions that are common between SEM and CFA include:

Linearity

For CFA analysis to be accurate there needs to exist a linear relationship between the latent variables and the underlying construct and should there be any existence of nonlinear relationship it may result in inaccurate factor loading and model fit problems (Field, 2009).

Multivariate normality

For CFA expect that the results of the observed variable should be evenly distribute and the represent the shape of a bell curve distribution. Serious deviations from normality may compromise the accuracy of the results.

Absence of multicollinearity

Multicollinearity can seriously affect the results of CFA statistical analysis as it is difficult to distinguish the effect of each independent variable on the dependent variable if they highly correlate between the independent variables (Field, 2009). Multicollinearity test is available via SPSS to verify the existence of Multicollinearity and that a VIF lower than 10 is necessary to confidently rule out the presence of multicollinearity (Pallant, 2020).

Absence of Outliers

For both SEM and CFA statistical analysis it is required that there be no outliers that can influence the statistical analysis. Outliers can inflate the standard deviation and move the mean (Field, 2009).

Adequate sample size

Adequate sample size is required in SEM to ensure the stability and reliability of the estimated parameters. Anderson and Gerbing (1984) proposes that a minimum sample size of 100 is required for Structural Equation Modelling (SEM) statistical analysis. Furthermore a minimum sample size for the use SEM is N = 100-150 as proposed by various authors (Anderson & Gerbing, 1988; Ding et al., 1995; Tabachnick & Fidell, 2001; Tinsley & Tinsley, 1987). There should be at least be five or more responses collected per variable (Pallant, 2020).

Continuous Data

To perform SEM or CFA analysis the data should be continue of nature. Interval data can also be analysis in SEM and CFA statistical techniques (Field, 2009).

Model Fit Indices:

A relationship testing process was conducted using AMOS v28 to create a structural equation model. The acceptance criteria for a well-fitting model included the following thresholds: CMIN/df, the goodness-of-fit (GFI) indices (Hair et al., 2010), the Tucker and Lewis (1973) index (TLI), and the Confirmatory Fit Index (CFI) (Bentler, 1990), all of which needed to exceed 0.90 (Hair et al., 2010). Furthermore, a model was considered to have an acceptable fit if the

standardized root mean square residual (SRMR) computed by AMOS v28 was less than 0.05, and the root mean square error approximation (RMSEA) fell within the range of 0.03 to 0.08 (Hair et al., 2010).

3.12 Validity and Reliability

It is important to assess and identify measurement error, the do so the Validity and reliability of the employed scale need to be carefully assessed.

Validity is the accuracy of the scale to measure the construct that it was designed to measure in the first place (Hair et al., 2010). Pamela (2019) proposes that validity is the ability of a scale to measure the construct being measured.

Discriminant validity can be established by verifying that the results from each scale does indeed differ from the results of other scales used in the same study to measure the various constructs (Pamela, 2019).

Hair et al. (2010) states proposes that reliability is the ability of an observed variable to measure the intended value and how error free the measurement is. Reliability refers to how free of random or unstable inaccuracy a measurement is (Pamela, 2019).

Previously proven scales will be used to ensure that during the verification process the data can be deemed reliable if all variables score greater than 0.7 using the Cronbach alpha equation (Cronbach, 1951).

The results from the already proven instruments will be compared to the instrument used in this study establish if results from this study correlates with the results from previous studies in which these instruments were used to establish convergent validity of the obtained results (Pamela, 2019).

3.12.1 *External validity*

External validity focuses on how the experimental treatment interacts with external factors and the effect this has on the ability to generalize over different times, situations, or people (Pamela, 2019).

Detailed record pertaining to the sample size and demographics of respondents will be published in the final research report to aid in the reproduction of the study in other provinces within South Africa with the aim to generate the same results.

3.12.2 *Internal Validity*

The ability of a research tool to precisely measure what it was supposed to assess constitutes internal validity (Pamela, 2019). Only previously proven research instruments were employed to aid in the assurance of high internal validity. Respondents will also be urged to be honest and precise in the completion of the online survey as proposed by (Pamela, 2019).

The online survey will have an introduction section explaining the urgency of answering the survey honestly and to the best of the respondent's knowledge.

3.12.3 *Reliability*

The Inter-Item Correlation Matrix was verified, and all results was positive indicating that the items are measuring the same underlying construct. The appearance of negative numbers may suggest that some of the items were not reverse-scored correctly (Pallant, 2020).

Cronbach's Alpha will be applied to the collected data to verify data reliability (Pamela, 2019). Previously proven scales were evaluated and select to try and ensure the reliability of the data collected in to achieve acceptable Cronbach's Alpha scoring.

The impact of deleting items from the scale as reflected in the column Alpha if Item Deleted was used and compare to the final alpha value. If any of the values in this column exceed the final alpha value, item was eliminated from the scale. Established scales was utilised and removing items would imply that results can't be compared to previous research (Pamela, 2019).

The average of the inter-item correlation was established using the Summary Item Statistics table, and the minimum and maximum used to confirm the deviation from the mean and to validate the relationship between the items on

the scale, Briggs and Cheek (1986) recommend a range of 0.2 to 0.4 for the inter-item correlation Statistical Techniques and Procedures.

3.12.4 *Construct Reliability and Validity*

An assessment of construct Reliability allows for the verification of the extent to which a variable or combination of variables measure is consistent in what it was designed to measure.

If the measurement is used in test the same individuals at different occasions and still report the same results, it would be deemed as consistent.

Construct Reliability

Composite reliability and Cronbach's alpha measurements can be employed to verify the reliability of the select scales and can be generated using SPSS.

An analysis was performed to assess the reliability of the measurement items by further examining the Composite Reliability (CR) values.

The below formula below is utilized to calculate the composite reliability (CR).

$$CR = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + (\sum \epsilon_i)}$$

Construct Validity

An analysis was performed to assess the convergent validity of the measurement items by further examining the average variance extracted (AVE). The calculation of the average variance extracted (AVE) can calculated using below formula.

$$\text{AVE} = \frac{\sum_{i=1}^{n} L_i^2}{n}$$

3.13 Statistical Techniques and Procedures

3.13.1 *Factor Analysis*

According to Field (2009), Factor analysis is a method for identifying groups of variables that measure the same construct. Factor analysis was performed in this work to investigate the structure of latent variables, integrate collinear variables, and compress the number of analysed items while maintaining the relevant information.

Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis (CFA) is a statistical technique used to evaluate how well a set of observed variables correspond to a hypothesized underlying concept known as the dependent variable (Hair et al., 2010). It helps researchers test whether their proposed measurement model fits the data. CFA is often used in social sciences and psychology to measure abstract constructs like opinions or attitudes. The relationships between independent variables and dependent variable can be assessed giving valuable insights into the underlying structure of their data and ensure that their measurements are valid (Hair et al., 2010). CFA was employed to verify that the factor loadings between the observed and unobserved variable are high, but the loading between the observed variable are low dismissing the concern related to multicollinearity. A CFA analysis was performed to assess and improve the model fit. Model fit indices were reviewed, and co-variances were added between items of the same construct to improve model fit where possible.

Structural Equation Modelling (SEM)

Structural Equation Modelling (SEM) is a statistical technique that allows for segregated relationship for each of the dependent variables and it provides an effective estimation for a series of multiple regression analysis all at once (Hair et al., 2010). In research SEM enables the researched to understand the “big picture” and can observe how the different factors interact with other construct and how they then contribute to the final result (Hair et al., 2010). It is key to rely

on previous research models when designing a SEM model for a specific research problem.

Mediation and Moderation Analysis

Hamzah et al. (2013) explored the moderation effects of organizational culture on the relationship between leadership competencies and job role performance employing Hierarchical Regression Analysis.

Frazier et al. (2004) investigated the limitations of using multiple regression to detect moderator effects and goes on to describe alternative procedures that can be employed, specifically structural equation modelling (SEM).

Collier (2020) details the procedure for testing moderation models when the moderator is continuous by creating and testing a structural model in SPSS AMOS that includes the independent variables, interaction term and the dependent variable.

3.14 Chapter Summary

3.15 Possible limitations and challenges of the study

i. This cross-sectional study will be taking a snapshot of the sample to assess the respective hypothesises.
ii. The full gigabit capability of 5G networks might not be deployed widely due to previous spectrum restrictions and thus consumers might not have had access to the best service that is possible via 5G technologies.

3.16 Ethical considerations

Researchers, and participants all have the responsibility to behave ethically. The ethical issues focus on deception, privacy, quality, notice, choice, access, security, respect, and bias. For the participant, his or her primary ethical responsibilities are truthfulness and completion of research tasks. For the researcher the responsibilities include obtaining informed consent as required,

accepting the subject’s choice on whether to participate, following appropriate safety procedures, and keeping participant identity confidential (Pamela, 2019).

The research questionnaire will be distributed via online channels. All data collected will be anonymous and informed consent will be obtained before data will be used as part of the research. All data collect will stored on secure the secure qualtrics.com server and only used for the purpose of academic research.

CHAPTER 4. RESULTS AND INTERPRETATION

This chapter's goal is to summarise and explain the findings of the study's analysis. The chapter starts off by outlining the sample characteristics of the respondents (consumers of 5G Enabled services). Followed by a review of the validity and reliability of all the employed scales from a pure theoretical aspect. Next, it discusses the adaptation of the scales utilising Confirmatory Factor Analysis. Followed by the validity and reliability of the newly adapted scales required to improve CFA model fit. Lastly the chapter covers evaluation of the Structural Equation Model (SEM) and then testing of the respective hypothesis testing.

4.1 Sample Characteristics

381 people who satisfied the requirements of having 5G coverage, having a 5G device, and using 5G-enabled services finished the online survey. Not all of the information gathered from the 381 participants was applicable. The incomplete data in 226 items was primarily the result of survey abandonment by respondents. In addition, two respondents said they lacked access to a 5G compatible device, while 13 respondents said their area lacked 5G coverage. 140 people made up the sample size once the data set's incomplete replies were all eliminated. Demographic data was also collected to compare the adoption 5G enabled services between the different age groups, gender and education level with result to be compared to research by (Shah et al., 2021) to see how results differ in South African context.

4.1.1 *Gender*

The sample consisted of 140 individuals, with gender distribution as follows: 63.6% identified as male (n = 89), 35.0% identified as female (n = 49), and 1.4% preferred not to disclose their gender (n = 2). Table 4-1 displays the gender distribution of the sample.

Table 4-1: Demographics of respondents by Gender

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	89	63.6	63.6	63.6
Female	49	35.0	35.0	98.6
Prefer not to say	2	1.4	1.4	100.0
Total	140	100.0	100.0	

4.1.2 *Age group*

From the 140 individuals that responded to the survey, 38.6% was within the 41 to 55 age group. The second largest group was the 25 to 35 age group at 24.3%, followed by the 36 to 40 age group that represented 17.9%. Second lastly it was the 18 to 24 age group that only made up 12.9% of the responses. The last group was the 56 to 90 age group that represented only 6.4% of the total 140 responses received, please see Table 4-2.

Table 4-2: Demographics of respondent per their age groups

Age Group	Frequency	Percent	Valid Percent	Cumulative Percent
18-24	18	12.9	12.9	12.9
25-35	34	24.3	24.3	37.1
36-40	25	17.9	17.9	55.0
41-55	54	38.6	38.6	93.6
56-90	9	6.4	6.4	100.0
Total	140	100.0	100.0	

It is apparent that Generation X respondents was mostly represented followed by Generation Z's and very few responses were received from baby boomer and traditionalists.

4.1.3 *Education*

The responses from the 140 individuals were evaluated to assess their level of education. From the result it was clear that 7.1% of respondents had a High School education, 13.6% obtained a Diploma, 25.7% graduated with a degree and 33.6% managed a Postgraduate Degree. From the 140 responses only

20.0% had education at the level of a master's degree and higher, as per the result shown in table 4-3.

Table 4-3: Demographics of respondents based on education level

Level of Education	Frequency	Percent	Valid Percent	Cumulative Percent
High School	10	7.1	7.1	7.1
Diploma	19	13.6	13.6	20.7
Degree	36	25.7	25.7	46.4
Postgraduate Degree	47	33.6	33.6	80.0
Master's degree and above	28	20.0	20.0	100.0
Total	140	100.0	100.0	

Since most of the data were collected online, through university registries and the professional network site LinkedIn, which is likely to attract educated people with professional profiles, this sample's composition of highly educated individuals can be explained

4.1.4 *Sample*

Data was predominately collected from users in the Gauteng region due to the high concentration of 5G users and the fact that Gauteng has the widest 5G coverage at the time of data collection. Sample frame was enforced by requesting the respondent to confirm the three key criteria before taking part in the survey, see results in Table 4-4.

Table 4-4: Sample frame results of enforced selection criteria

Sample Criteria	Frequency	Percent	Valid Percent	Collective Percent
5G capable device	140	100	100	100
5G Radio coverage	140	100	100	100
Using of 5G services	140	100	100	100

In a sample of 140 cases, 100% of the devices were 5G capable, had 5G radio coverage, and utilized 5G services (Sample Criteria). The frequency, percent, valid percent, and collective percent were all 100% for each criterion.

4.1.5 *Frequency Analysis*

Reviewing the collected responses as per (Appendix B, Table 1-1) it is apparent that of respondents have a positive perception of the speed of 5G-enabled services with a high percentage expressing strong agreement. There was a small percentage of participants having the opposing views about the speed of 5G-Enabled services.

Looking at items that scored negatively Q15 of the survey that focused on participant's beliefs regarding whether 5G-enabled services will waste their time. The responses gave insights into the perceptions of participants regarding the time-related impacts of 5G enabled service and whether it is a waste of time.

4.1.6 *Descriptive Analysis*

From results in Table 4-5, it is clear that respondents expressed a positive sentiment to 5G-enabled services. They did however voice a few doubts about the pricing of 5G services and believed that purchasing a 5G-capable handset will be expensive (Mean = 5.51 / Standard Deviation = 1.360).

There were also concerned about the access cost for utilizing 5G-enabled services and felt it would be relatively high (Mean = 4.41 / Standard Deviation = 1.904). Participants not of the same opinion when considering the fact that 5G services would be probability expensive (Mean = 4.34 / Standard Deviation = 1.794).

When it comes to perceived value of 5G-enabled services and the sacrifice of paying for 5G-enabled services respondents felt it to be worthwhile paying for 5G-enabled service (Mean = 5.15 / Standard Deviation = 1.464).

Respondents felt it would be beneficial to them after considering the aspects of using 5G services (Mean = 5.77 / Standard Deviation = 1.231). Respondents generally believed that there was value in using 5G-enabled services (Mean = 5.74 / Standard Deviation = 1.203). Participants exhibited strong intent and optimism when asked if they will adopt 5G-enabled services.

Participants expressed their intension to make use of these 5G-enabled services as per the results (Mean = 6.28 / Standard Deviation = 0.849) of the Adoption Intension items. They also revealed their intention to utilize 5G equipped devices as being quite high (Mean = 6.29 / Standard Deviation = 0.856) and stated that they most probably see themselves using 5G services soon (Mean = 6.34 / Standard Deviation = 0.812).

Table 4-5: Descriptive statistics for collected responses

Item	Question	Valid	Missing	Mean	Median	Mode	Std. Deviation	Min	Max
PB1	Q8	138	2	5.93	6.00	7	1.544	1	7
PB2	Q9	140	0	5.74	6.00	7	1.472	1	7
PB3	Q10	138	2	5.76	6.00	7	1.443	1	7
PB4	Q11	140	0	5.93	6.00	7	1.428	1	7
PS1	Q12	140	0	5.51	6.00	5	1.360	1	7
PS2	Q13	140	0	4.41	5.00	5	1.904	1	7
PS3	Q14	140	0	4.34	5.00	5[a]	1.794	1	7
PS3	Q15	140	0	2.23	2.00	2	1.385	1	7
PV1	Q16	140	0	5.15	5.00	6	1.464	1	7
PV2	Q17	140	0	5.77	6.00	6	1.231	1	7
PV3	Q18	139	1	5.75	6.00	6	1.174	1	7
PV4	Q19	140	0	5.74	6.00	6	1.203	1	7
AI1	Q20	140	0	6.28	6.00	7	0.849	2	7
AI2	Q21	138	2	6.29	6.00	7	0.856	2	7
AI3	Q22	140	0	6.34	6.00	7	0.812	2	7
SI1	Q23	140	0	5.37	6.00	6	1.461	1	7
SI2	Q24	140	0	5.34	6.00	6	1.413	1	7
SI3	Q25	140	0	5.31	6.00	6	1.507	1	7
SI4	Q26	140	0	5.30	6.00	6	1.458	1	7
SI5	Q27	140	0	5.86	6.00	7	1.236	1	7
SI6	Q28	140	0	5.26	6.00	6	1.544	1	7
FK1	Q29	138	2	5.68	6.00	7	1.445	1	7
FK2	Q30	140	0	5.77	6.00	7	1.343	1	7
FK3	Q31	140	0	6.01	6.00	7	1.190	1	7
FK4	Q32	140	0	5.46	6.00	6	1.620	1	7
FK5	Q33	139	1	5.88	6.00	7	1.305	1	7

Note: a. Multiple modes exist. The smallest value is shown

Furthermore, participants recognized the influence of important people and social factors in their decision-making. They believed that people important to them would recommend and expect them to make use of 5G-enabled services (SI1 to SI5: Mean range = 5.30-5.86, Std. Deviation range = 1.236-1.507). Participants also perceived the influence of people who affect their actions as supportive of utilizing 5G services (Mean = 5.26, Std. Deviation = 1.544).

Participants exhibited some level of scepticism towards 5G-related news and information. They indicated a tendency to consider news articles lacking sources

as potentially false (Mean = 5.68, Std. Deviation = 1.445). Participants also expressed a belief that certain 5G news is designed to bring harm and disorder to society (Mean = 5.46, Std. Deviation = 1.620), and that headlines about 5G on social media can be presented in a misleading fashion (Mean = 5.88, Std. Deviation = 1.305).

In summary, the participants in this survey displayed moderately positive attitudes towards 5G-enabled services, with favourable perceptions of their speed, quality, user experience, and usefulness. However, concerns were noted regarding the cost of 5G services, even if this was not a huge concern. Participants expressed a strong intention to use 5G in the future, they also expressed that they are being influenced by important people in their lives to consider using 5G enabled services and recognizing the potential for misinformation in 5G-related news and social media content affecting their perception of adopting 5G-Enabled service.

4.1.7 *Summary of all responses for all items within the collected dataset.*

The dataset comprised responses for multiple items, with mean ratings ranging from 2.23 to 6.34, indicating diverse levels of evaluation. Notably, items AI1, AI2, and AI3 received higher average ratings, reflecting relatively positive evaluations indicating that there was a positive sentiment between respondent related to the adoption of 5G enabled services, while item PS4 received the lowest average rating, suggesting a less favourable evaluation by respondents indicating that people don’t see 5G enabled service as a waste of time.

The standard deviations for the items ranged from 0.812 to 1.904, indicating varying levels of variability in the ratings. Items PS2, SI6, and FK4 exhibited higher standard deviations, suggesting greater dispersion in the responses. Conversely, items AI3, AI2, and AI1 displayed lower standard deviations, indicating less variability in the ratings of those items and that respondents had more aligned perception related to their Adoption intend related to 5G enabled service.

4.2 Reliabilities of Employed Scales

Summary of reliability values and the selected scales for utilization study is presented in Table 4-6. These findings suggest that caution should be exercised when interpreting and using the Perceived Sacrifice scale. While it may still provide some insight into participants' perceptions of sacrifice, its lower reliability indicates a potential limitation in accurately capturing the construct under investigation.

Table 4-6: Summary of scales and reliability

Construct	Code	Cronbach's Alpha - Initial	N of Items	Items deleted	Cronbach's Alpha - Adjusted
Perceived Benefited	PB	0.940	4	-	0.940
Perceived Sacrifice	PS	**0.601**	4	1	0.758
Perceived Value	PV	0.965	4	-	0.965
Adoption Intent	AI	0.960	3	-	0.960
Social Influence	SI	0.931	6	-	0.931
Fake News Knowledge	FK	0.851	5	-	0.851

Literature claims that a higher result of Cronbach's coefficient alpha suggests a higher level of measurement scale reliability (Cronbach, 1951). Table 4-5 shows that most the alphas are greater than 0.7 except for the Perceived Sacrifice scale that scored 0.099 lower than the accepted 0.7 minimum requirement as developed by Nunnally in 1978 and reported by (Field, 2009). The specifics of the Cronbach alpha, the adjusted item-total correlation, and Cronbach's alpha if the item is eliminated were also evaluated as part of the testing.

These findings suggest that caution should be exercised when interpreting and using the Perceived Sacrifice scale. While it may still provide some insight into participants' perceptions of sacrifice, its lower reliability indicates a potential limitation in accurately capturing the construct under investigation. Further refinement or exploration of alternative measurement approaches may be warranted to improve the scale's reliability and ensure more robust assessments of perceived sacrifice in future research.

The reliability results of each construct are discussed next, beginning with Perceived Benefit, then Perceived Sacrifice, Perceived Value, Adoption Intent,

and Social Influence. Finally, the construct measuring Fake news knowledge will be examined.

4.2.1 *Perceived Benefits and Perceived Sacrifice*

Scale: Perceived Benefits

Of the total sample of 140 cases, 97.1% i.e. 136 were considered valid and included in the analysis, see Table 4-7. A small proportion of cases, 2.9% i.e. 4 cases were excluded from the analysis due to having missing values for some of the items (Field, 2009).

Table 4-7: Case Processing Summary - Perceived Benefit

		N	%
Cases	Valid	136	97.1
	Excluded[a]	4	2.9
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

The initial Cronbach's Alpha Combined reported in Table 4-8 was very high at 0.940, This indicated a high level of internal consistency.

Table 4-8: Reliability Statistics - Perceived Benefit

Cronbach's Alpha	N of Items
0.940	4

Item-total statistics for the Perceived Benefit Scale in Table 4-33 were examined, focusing on results from the Cronbach's Alpha if Item Deleted column. The scale consisted of four items (PB3, PB4, PB2, PB1) with corresponding questions (Q10, Q11, Q9, Q8). Analyses revealed that removing any one of the items from the scale does not improve the Cronbach's Alpha Combined paste the initial value of 0.940.

Table 4-9: Item-Total Statistics - Perceived Benefit

Item	Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha Combined
PB3	Q10	17.65	16.657	0.891	0.911	0.940
PB4	Q11	17.48	16.992	0.861	0.920	
PB2	Q9	17.68	16.532	0.872	0.917	
PB1	Q8	17.45	16.886	0.806	0.938	

Shelvia et al. (2020) reported a lower Cronbach's alpha value of 0.867, compared to the Cronbach's alpha value of 0.940 of this study, for the same scale when investigating Consumer's continuance intention to use mobile payments.

The above findings suggest that all items on the perceived benefit items contribute to Perceived Benefit Scale's internal consistency.

Based on the above analysis the following scale will be deemed as reliable.

Scale: Perceived Sacrifice

The empirical study's case processing summary, presented in table 4-10, indicates that 140 cases were analysed for the variable Perceived Sacrifice. All 140 cases were considered valid, and no exclusions were made.

Table 4-10: Case Processing Summary - Perceived Benefit

		N	%
Cases	Valid	140	100.0
	Excluded[a]	0	0.0
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

According to the reliability analysis from Table 4-11, the perceived sacrifice scale demonstrated very close to acceptable internal consistency. Cronbach's alpha for the scale was 0.699, just below the recommended cut-off value of 0.7 (Field, 2009).

Table 4-11: Reliability Statistics - Perceived Sacrifice

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.699	0.677	4

The inter-item correlation matrix in Table 4-12 revealed that item Q15 demonstrated relatively weak associations with the other items Q12, Q13 and Q14 also measuring perceived sacrifice. The correlation coefficients between Q15 and the other items were as follows: Q15 and Q12 had a negligible correlation of only 0.033, Q15 and Q13 showed a weak positive relationship with a correlation coefficient of 0.248, and Q15 and Q14 exhibited a weak but positive association with correlation coefficients equal to 0.281. These findings suggest that the perceived sacrifice measured by Q15 is not strongly correlated with the perceived sacrifice measured by the other items Q12, Q14 and Q14. Although there are some positive relationships the correlation coefficient is not above the required 0.3 cut-off value as per (Field, 2009) and thus PS4 (Q15) can be seen as a weak item and should be excluded.

Table 4-12: Inter-Item Correlation Matrix - Perceived Sacrifice

Item	Question	Q12	Q13	Q14	Q15
PS1	Q12	1.000			
PS2	Q13	0.314	1.000		
PS3	Q14	0.446	0.744	1.000	
PS4	Q15	0.033	0.248	0.281	1.000

Tables 4-13 present results indicating that the Perceived Sacrifice scale performs poorly with four items and Cronbach's alpha of only 0.601. Table 4-13 demonstrates that removing item PS4 it improves the Cronbach's alpha to 0.758.

Table 4-13: Item Total Statistics - Perceived Sacrifice

Item	Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha Combined
PS1	Q12	10.99	16.547	0.355	0.209	0.706	0.601
PS2	Q13	12.09	10.683	0.644	0.555	0.519	
PS3	Q14	12.16	10.450	0.746	0.615	0.439	
PS4	**Q15**	14.27	17.580	**0.243**	0.093	**0.758**	

The fact that the Corrected Item-Total Correlation is lower than the required 0.3 minimum and it is a clear indication that the PS4 item needs to be deleted for the Cronbach's alpha value to improve 0.758 which is acceptable, and Correlation would increase to 0.746.

Shah et al. (2021) in the study “Consumer's intention to purchase 5G” reported a Cronbach's alpha value of 0.738 for the same scale, whereas (Shelvia et al., 2020) reported much higher Cronbach's alpha value of 0.897 for the same scale.

Based on the above analysis the following the Perceived Sacrifice scale was adapted by deleting the PS4, resulting in a Cronbach's alpha to 0.758, the implies that that the adapted scale in Table 4-14 can be retained.

Table 4-14: Item Total Statistics - Perceived Sacrifice

Item	Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha Combined
PS1	Q12	8.76	11.926	0.405	0.200	0.852	0.758
PS2	Q13	9.86	7.246	0.654	0.553	0.601	
PS3	Q14	9.93	7.103	0.759	0.603	0.459	

4.2.2 *Perceived Value, Social Influence and Fake News Knowledge*

Scale: Social Influence

The case processing summary in Table 4-15 for an empirical study on social influence indicated that all 140 cases were valid and included in the analysis. No cases were excluded.

Table 4-15: Case Processing Summary – Social Influence

		N	%
Cases	Valid	140	100.0
	Excluded[a]	0	0.0
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

In an empirical study assessing the reliability of the Social Influence measurement scale, table 4-16, Cronbach's alpha coefficient was found to be 0.931, with 6 items included, indicating a high level of internal consistency. These

findings suggest that the Social Influence scale is a reliable measure for assessing the extent of social influence experienced by respondents.

Table 4-16: Reliability Statistics - Social Influence

Cronbach's Alpha	N of Items
0.931	6

An examination of the construct items revealed the following results in Table 4-17 revealed that the item with the highest Cronbach's Alpha if Item Deleted was SI5 (Q27), with a value of 0.934. This indicates that removing SI5 from the scale would increase the overall reliability coefficient. Additionally, SI5 exhibited a moderate Corrected Item-Total Correlation of 0.662, suggesting a moderate correlation with the total scale score and is well above the cut-off value of 0.3 as proposed by (Field, 2009).

Table 4-17: Item Total Statistics - Social Influence

Item	Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha Combined
SI4	Q26	27.15	37.654	0.880	0.908	0.931
SI3	Q25	27.14	37.490	0.853	0.911	
SI6	Q28	27.19	37.908	0.801	0.918	
SI2	Q24	27.11	38.974	0.824	0.915	
SI1	Q23	27.08	39.253	0.772	0.922	
SI5	Q27	26.59	43.223	0.662	0.934	

Despite the improvement, Item SI5 was kept since it is not significantly different from the overall alpha, only a slight improvement, and the corrected item-total correlation was more than 0.3, indicating that the scale is dependable.

Shelvia et al. (2020) reported a Cronbach's alpha value of 0.965 that closely reflect the value reported in the study, where a Cronbach's alpha value 0.931 was reported.

Based on the above analysis the following scale will be retained.

- ✓ Social Influence

Scale: Perceived Value

Of the 139 responses in Table 4-18 (99.3%) that were considered valid and was included in the analysis, From the 140 responses, 1 response (0.7%) was excluded using listwise deletion due to missing values on all items include in the construct.

Table 4-18: Case Processing Summary – Perceived

		N	%
Cases	Valid	139	99.3
	Excluded[a]	1	0.7
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

The reliability statistics revealed that the scale employed in the study exhibited a strong level of internal consistency with the Cronbach's alpha score at 0.896 with four items included as per Table 4-19.

Table 4-19: Reliability Statistics – Perceived Value

Cronbach's Alpha	N of Items
0.896	4

The obtained Cronbach's alpha coefficient of 0.896 indicates a high degree of reliability as per Table 4-20, indicating that the items comprising the scale consistently measure the intended construct. The scale consisted of 4 items, indicating that participants responded to a set of 4 questions or statements.

Table 4-20: Item Total Statistics – Perceived Value

Item	Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha Combined
PV3	Q18	16.63	11.584	0.850	0.840	0.896
PV4	Q19	16.65	11.723	0.800	0.857	
PV2	Q17	16.61	11.776	0.765	0.868	
PV1	Q16	17.24	10.907	0.696	0.903	

Tables 4-20 give extensive results indicating that the Perceived Value scale performs well (four items, Alpha=0.896). Table 4-20 shows that eliminating item PV1 raises the Cronbach's alpha to 0.903. Despite the improvement, Item PV1

was retained since it is not significantly different from the overall alpha, only a slight improvement, and the corrected item-total correlation was greater than 0.3, indicating that the scale is dependable.

Shah et al. (2021) reported Cronbach's alpha of 0.9 in a study related to consumer's intention to purchase 5G, this value is very close to the Cronbach's alpha of 0.896 in this study.

Based on the above analysis the following scale will be retained.

- ✓ Perceived Value

Scale: Fake News Knowledge

According to the Table 4-21 out of a total of 140 responses collected, 137 responses, 97.9% were considered as valid, while 3 responses 2.1% were excluded. The exclusion of cases was based on listwise deletion, which involved removing cases with missing data on any of the items used in the analysis (Field, 2009).

Table 4-21: Case Processing Summary – Fake News Knowledge

		N	%
Cases	Valid	137	97.9
	Excluded[a]	3	2.1
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

The Fake News Knowledge scale in the study exhibited strong internal consistency reliability, as indicated by a Cronbach's alpha coefficient of 0.851 with five items included, as per Table 4-22. This suggests that the five items comprising the scale consistently measured the same underlying construct.

Table 4-22: Reliability Statistics – Fake News Knowledge

Cronbach's Alpha	N of Items
0.851	5

From Table 4-23 All items demonstrated a corrected item-total correlation from 0.570 to 0.819, indicating a moderate to high association with the total score of the scale and well above the minimum of 0.3. However, when examining the internal consistency reliability of the scale, deleting Item FK4 resulted in an increase in Cronbach's Alpha to 0.852 from the initial combined Cronbach's Alpha of 0.851. This suggests that only an exceedingly small improvement will be made is if by deleting item FK4.

Table 4-23: Item Total Statistics – Fake News Knowledge

Item	Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha Combined
FK3	Q31	22.74	20.206	0.819	0.787	
FK5	Q33	22.88	19.707	0.770	0.793	
FK2	Q30	23.01	20.728	0.636	0.827	0.851
FK4	Q32	23.31	19.496	0.570	0.852	
FK1	Q29	23.09	20.639	0.581	0.842	

Item FK4 was retained since it no significant improvement will be made by deleting the item and the corrected item-total correlation was greater than 0.3, showing that the scale is reliable.

Apuke and Omar (2020) reported a Cronbach's alpha of 0.91 investigating the impact of the moderating role of fake news knowledge in sharing unverified information, this is comparable to the Cronbach's alpha of 0.851 reported in this study.

Based on the above analysis the following scale will be retained.

- ✓ Fake News Knowledge

4.2.3 *Adoption Intentions*

Scale: Adoption Intention

According to the results from table 4-24, a total of 140 responses were included in the analysis, of which 138 (98.6%) were deemed as valid, while 2 (1.4%) responses were excluded. Listwise deletion was employed to exclude cases with missing values on any of the variables in the analysis as per SPSS procedure detailed by (Pallant, 2020).

Table 4-24: Case Processing Summary - Adoption Intention

		N	%
Cases	Valid	138	98.6
	Excluded[a]	2	1.4
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

From reliability statistics in Table 4-25 it is apparent that the measurement scale used in this study demonstrates high internal consistency, as indicated by Cronbach's alpha coefficient of 0.965 with three items in the scale. This suggests that the three items in the scale reliably measure the same underlying construct.

Table 4-25: Reliability Statistics – Adoption Intention

Cronbach's Alpha	N of Items
0.965	3

From Table 4-26 it is seen that the Cronbach's Alpha if item AI3 (Q22) is deleted is 0.955. This indicates that the deletion of item AI3 would result in a decrease in Cronbach's Alpha from an 0.965 combined value. The value of 0.955 suggests that item AI3 contributes positively to the overall reliability of the scale. The overall Cronbach's Alpha for the combined scale is 0.965.

The full results in Tables 4-26 show that the Adoption Intent Scale performs well with Cronbach's Alpha of 0.965 with only three items included.

Table 4-26: Item Total Statistics – Adoption Intention

Item	Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha Combined
AI2	Q21	12.63	2.585	0.932	0.942	
AI1	Q20	12.64	2.627	0.927	0.946	0.965
AI3	Q22	12.57	2.772	0.915	0.955	

The removal of item AI1, AI2 or AI3 would not improve the Cronbach's alpha over the existing 0.965 in Table 4-26. All Items were without improvement, suggesting that the scale is dependable, and the adjusted item-total correlation was more than 0.3, indicating that the scale is dependable.

Shah et al. (2021) research on Consumer's intention to purchase 5G reported a Cronbach's alpha of 0.778 much lower that the Cronbach's alpha of 0.965 reported in this study.

Based on the above analysis the following scale will be retained.

- ✓ Adoption Intention

4.2.4 *Review of scale reliabilities*

In the present study, multiple scales were constructed and validated to assess different constructs. The scales included Perceived Benefited (PB), Perceived Sacrifice (PS), Perceived Value (PV), Adoption Intent (AI), Social Influence (SI), and Fake News Knowledge (FK). Each scale was evaluated based on the scale type (empirical or theoretical), Cronbach's Alpha coefficients (initial and adjusted), the number of items, and whether any items were deleted.

The Perceived Benefit scale demonstrated high reliability, with a Cronbach's Alpha coefficient of 0.940 for both the empirical and theoretical versions. Similarly, the Perceived Value scale exhibited excellent internal consistency, with a Cronbach's Alpha coefficient of 0.965 for both empirical and theoretical versions. The Adoption Intent and Social Influence scales also demonstrated high reliability, with Cronbach's Alpha coefficients of 0.960 and 0.931, respectively, for both empirical and theoretical versions.

The Perceived Sacrifice scale was constructed from items identified from and validated to assess participant’s perceptions of sacrifice in a particular context. The scale was evaluated based on its scale type (empirical vs theoretical), Cronbach's Alpha coefficients (initial vs adjusted), the number of items, and whether any items were deleted.

The Perceived Sacrifice scale demonstrated relatively lower reliability, with a Cronbach's Alpha coefficient of 0.601 for the empirical version and 0.758 for the theoretical version. In the empirical version, two items were deleted from the original scale, while one item was deleted in the theoretical version.

The Fake News Knowledge scale displayed acceptable reliability, with a Cronbach's Alpha coefficient of 0.851 for both the empirical and theoretical versions. No items were deleted from this scale.

Overall, the results indicate that the Perceived Benefited, Perceived Value, Adoption Intent, Social Influence, and Fake News Knowledge scales are reliable measures for assessing their respective constructs. However, caution should be exercised when using the Perceived Sacrifice scale, as it demonstrated lower reliability in this study.

Overall Scores of scales

As presented in Table 4-27 variables were measured on scales ranging from 1.00 to 7.00. Perceived Value had a minimum scale of 1.50. Social Influence had a minimum scale of 1.17 and Adoption Intention had a minimum scale of 2.00. The data exhibited varying degrees of variability, with standard deviations ranging from 0.81 to 1.40, with respondent closely have the same perception of Adoption intension. These findings provide insights into the participants' perceptions of benefits, sacrifice, value, adoption intention, social influence, and fake news knowledge.

Table 4-27: Overall Scores of scales

Scale	Valid	Missing	Mean	Median	Std. Deviation	Minimum	Maximum
Perceived Benefit	140	0	5.8351	6.2500	1.35022	1.00	7.00
Perceived Sacrifice	140	0	4.7571	5.0000	1.39764	1.00	7.00
Perceived Value	140	0	5.6036	5.8750	1.11360	1.50	7.00
Adoption Intention	140	0	6.3024	6.3333	0.81247	2.00	7.00
Social Influence	140	0	5.4083	5.5000	1.24181	1.17	7.00
Fake News Knowledge	140	0	5.7625	6.0000	1.09615	1.00	7.00

a. *Values calculated based on "Appendix B - Table 5 : Missing Value Analysis – Post Correction"*

4.3 Confirmatory Factor Analysis (CFA)

The goal of this chapter was to verify that the hypothesised relationship between the observed Items and the associate construct do indeed exists. Results from the analysis can aid in the verifying discriminant and converged validity, accurately reporting that selected item load highly on the intended variables, but low on the latent variables. To perform the analysis SPSS AMOS V28 was used to assess the conceptual research model.

4.3.1 *Model fit*

The model fit was evaluated using the obtained results, and necessary improvements were made by examining the resulting modification indices and making appropriate adjustments. The standardized Regression weight was also evaluated and variable with excessive high loading was removed.

The chi-square test resulted in a score of $\chi^2 = 147{,}856$ with 120 degrees of freedom. The probability level associated with this result was $p = 0.043$, suggesting that the obtained chi-square value is not statistically significant at a significance level of 0.05, but only 0.007 from the required cut-off value.

The statistical model showed a good fit to the data, as indicated by several fit indices as per Table 4-28 and overall the model meets the model fit criteria with only the exception of SRMR that is just out of range (CMIN/DF<3; GFI>0.8: CFI>0.95; RMSEA<0.05; SRMR<0.1 and TLI/NNFI>0.9) as proposed Hooper et al. (2008).

Table 4-28: Model Fit results (CFA)

Model	CMIN	CMIN/DF	GFI	TLI/NNFI	CFI	RMSEA	SRMR
Result	147.856	1.232	0.902	0.981	0.985	0.041	0.1268
Range		<2.0	>.90	>.90	≥ 0.95	0.03-0.08	< 0.1
Author		(Tabachnick & Fidell, 2007)	(Hair et al., 2010)	(Tucker & Lewis, 1973)	(Sivo et al., 2006)	(Hair et al., 2010)	(Hair et al., 2010)

4.3.2 *Model estimates*

The model estimate from table 4-29 confirms that all the square factor loading and greater than the required 0.2 value. Furthermore all the standardized regression weight load highly with all loading above the required (beta>0.4 and P<0.001) indicating that all paths are significant except for the paths that was constraint for scaling (Hooper et al., 2008).

Table 4-29: Model Estimates (CFA)

Conceptual Model			B	S.E.	C.R.	P	β	Squared Multiple Correlations
PS3	<---	PS	1.034	0.107	9.666	***	0.578	0.334
PS2	<---	PS	1.034	0.107	9.666	***	0.537	0.289
PV4	<---	PV	1				0.876	0.767
PV3	<---	PV	1.018	0.069	14.659	***	0.916	0.839
PV2	<---	PV	0.957	0.079	12.123	***	0.819	0.671
AI3	<---	AI	1				0.929	0.863
AI2	<---	AI	1.052	0.051	20.485	***	0.931	0.866
AI1	<---	AI	1.086	0.048	22.623	***	0.965	0.931
SI6	<---	SI	1				0.778	0.606
SI4	<---	SI	1.155	0.091	12.72	***	0.952	0.907
SI3	<---	SI	1.186	0.092	12.934	***	0.945	0.894
FK5	<---	FK	1				0.832	0.692
FK3	<---	FK	0.959	0.099	9.675	***	0.881	0.776
FK2	<---	FK	0.828	0.103	8.047	***	0.675	0.456
PB4	<---	PB	1				0.885	0.783
PB2	<---	PB	1.049	0.074	14.118	***	0.900	0.809
PB1	<---	PB	1.023	0.08	12.841	***	0.837	0.700
PS1	<---	PS	1.034	0.107	9.666	***	0.769	0.592

Notes:

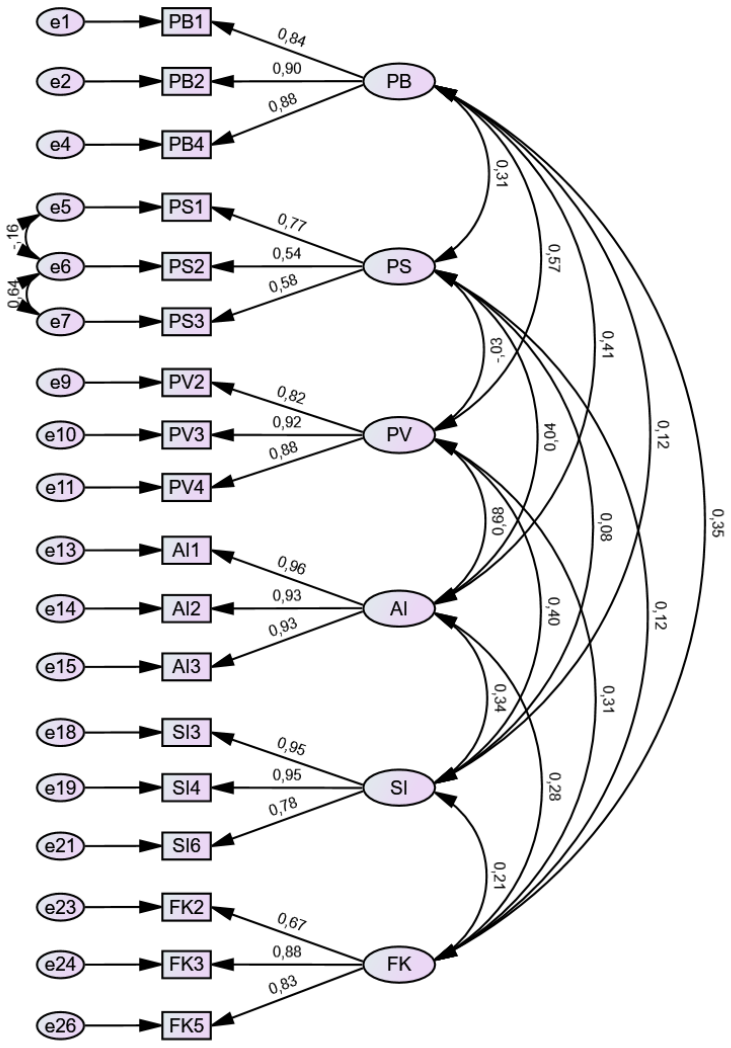
β = Standardized coefficient weight

B = Unstandardized coefficient weight

4.3.3 *First order CFA analysist*

Figure 4.1 is a graphical representation of the conceptual model with its six-factor structure. Double headed arrows represent the covariance between two constructs, whistle the single headed arrows depicts the relationship between the item and the respective factor. The range from the Square Multiple Corelations range from 28.9% to 93.1% give in a clear indication of what variance each factor accounts for. Two of the covariance between factors are high but none of the loading are above 0.8 dismissing any concerns related to singularity or multicollinearity. Covariance was added to the error terms of Perceived sacrifice that resulted in significantly improving the model.

Figure 4-1: First order CFA Model



4.3.4 *Model fit summary*

The statistical model demonstrated a good fit to the data, as indicated by several fit indices and meets the model fit criteria (CMIN/DF<3; GFI>0.8: CFI>0.95; RMSEA<0.05 and TLI>0.9;)as proposed Hooper et al. (2008).

Reliabilities and Validity of Adapted Scales

The chapter evaluates and reports the reliability and validity based on the evaluation of the adapted scales used in in final measurement model. The reliability and validity assessment of the employed scales is key to ensure accurate results in the Structural Equations Model that will be employed to perform the final hypothesis testing.

4.3.5 *Construct Reliability*

Perceived Benefits, Perceived Sacrifice and Perceived Value

Scale: Perceived Benefits - Adapted

The initial Cronbach's Alpha Combined reported in Table 4-31 was very high at 0.906, This indicated a high level of internal consistency.

Table 4-30: Reliability Statistics - Perceived Benefit (Adapted)

Cronbach's Alpha	N of Items
0.906	3

Item-total statistics for the Perceived Benefit Scale in Table 4-32 were examined, focusing on results from the Cronbach's Alpha if Item Deleted column. The scale consisted of four items (PB4, PB2, PB1) with corresponding questions (Q11, Q9, Q8). Analyses revealed that removing any one of the items from the scale does not improve the Cronbach's Alpha Combined paste the initial value of 0.906.

Table 4-31: Item-Total Statistics - Perceived Benefit (Adapted)

Item	Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha Combined
PB1	Q8	11.66	7.534	0.792	0.884	
PB2	Q9	11.86	7.706	0.827	0.852	0.906
PB4	Q11	11.66	7.980	0.820	0.860	

Shelvia et al. (2020) reported a lower Cronbach's alpha value of 0.867, compared to the Cronbach's alpha value of 0.906 of this study, for the same scale when investigating Consumer's continuance intention to use mobile payments.

The above findings suggest that all items on the perceived benefit items contribute to Perceived Benefit Scale's internal consistency.

Based on the above analysis the following scale will be retained.

- ✓ Perceived Benefit (Adapted)

Scale: Perceived Sacrifice - Adapted

According to the reliability analysis in Table 4-33, the perceived sacrifice scale demonstrated very close to acceptable internal consistency. Cronbach's alpha for the scale was 0.758, well above the recommended cut-off value of 0.7 (Field, 2009)

Table 4-32: Reliability Statistics - Perceived Sacrifice (Adapted)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.758	0.751	3

Tables 4-34 present results indicating that the Perceived Sacrifice scale performs well with three items and Cronbach's alpha of only 0.758. Table 4-34 demonstrates that removing item PS1 it improves the Cronbach's alpha to 0.852.

Table 4-33: Item Total Statistics - Perceived Sacrifice (Adapted)

Item	Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha Combined
PS1	Q12	8.76	11.926	0.405	0.200	0.852	
PS2	Q13	9.86	7.246	0.654	0.553	0.601	0.758
PS3	Q14	9.93	7.103	0.759	0.603	0.459	

The fact that the Corrected Item-Total Correlation is lower than the required 0.3 minimum and it is a clear indication that the PS1 item needs to be deleted for the Cronbach's alpha value to improve 0.852 which is acceptable, and Correlation would increase to 0.405. Three Items per construct is require for CFA analysis and PS1 will be retained.

Shah et al. (2021) in the study “Consumer's intention to purchase 5G” reported a Cronbach's alpha value of 0.738 for the same scale, whereas (Shelvia et al., 2020) reported much higher Cronbach's alpha value of 0.897 for the same scale.

Based on the above analysis the following scale will be retained.

- ✓ Perceived Sacrifice (Adapted)

Perceived Value, Social Influence and Adopt Intent

Scale: Social Influence - Adapted

In an empirical study assessing the reliability of the Social Influence measurement scale, table 4-35, Cronbach's alpha coefficient was found to be 0.919, with 3 items included, indicating a high level of internal consistency. These findings suggest that the Social Influence scale is a reliable measure for assessing the extent of social influence experienced by respondents.

Table 4-34: Reliability Statistics - Social Influence (Adapted)

Cronbach's Alpha	N of Items
0.919	3

An examination of the construct items revealed the following results revealed that the item with the highest Cronbach's Alpha if Item Deleted was SI6 (Q28), with a value of 0.918, as per Table 4-36. This indicates that removing SI6 from the scale would not increase the overall reliability coefficient. Additionally, SI6 exhibited a moderate Corrected Item-Total Correlation of 0.757, suggesting a moderate correlation with the total scale score and is well above the cut-off value of 0.3 as proposed by (Field, 2009).

Table 4-35: Item Total Statistics - Social Influence (Adapted)

Item	Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha Combined
SI3	Q25	10.56	7.802	0.881	0.908	
SI4	Q26	10.57	8.117	0.873	0.911	0.919
SI6	Q28	10.61	8.355	0.757	0.918	

Despite the improvement, Item SI6 was kept since it is not significantly different from the overall alpha there is no improvement, and the corrected item-total correlation was more than 0.3., indicating that the scale is dependable.

Shelvia et al. (2020) reported a Cronbach's alpha value of 0.965 that closely reflect the value reported in the study, where a Cronbach's alpha value 0.931 was reported.

Based on the above analysis the following scale will be retained.

- ✓ Social Influence (Adapted)

Scale: Perceived Value - Adapted

The reliability statistics revealed that the scale employed in the study exhibited a strong level of internal consistency with the Cronbach's alpha score at 0.901 with three items included as per Table 4-37.

Table 4-36: Reliability Statistics – Perceived Value (Adapted)

Cronbach's Alpha	N of Items
0.901	3

The obtained Cronbach's alpha coefficient of 0.901 indicates a high degree of reliability as per Table 4-38, indicating that the items comprising the scale consistently measure the intended construct. The scale consisted of 3 items, indicating that participants responded to a set of 3 questions or statements.

Table 4-37: Item Total Statistics – Perceived Value (Adapted)

Item	Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha Combined
PV2	Q17	11.48	5.086	0.765	0.891	0.901
PV3	Q18	11.51	5.000	0.855	0.815	

PV4	Q19	11.51	5.101	0.792	0.868
PV1	Q16	17.24	10.907	0.696	0.903

Tables 4-38 give extensive results indicating that the Perceived Value scale performs well (three items, Alpha=0.896). Table 4-38 (PV) shows that eliminating item PV1 raises the Cronbach's alpha to 0.901. Despite the improvement, Item PV1 was retained since it is not significantly different from the overall alpha, only a slight improvement, and the corrected item-total correlation was greater than 0.3, indicating that the scale is dependable.

Shah et al. (2021) reported Cronbach's alpha of 0.9 in a study related to consumer's intention to purchase 5G, this value is very close to the Cronbach's alpha of 0.896 in this study.

Based on the above analysis the following scale will be retained.

- ✓ Perceived Value (Adapted)

Scale: Adoption Intentions - Adapted

From reliability statistics in Table 4-39 it is apparent that the measurement scale used in this study demonstrates high internal consistency, as indicated by Cronbach's alpha coefficient of 0.960 with three items in the scale. This suggests that the three items in the scale reliably measure the same underlying construct.

Table 4-38: Reliability Statistics – Adoption Intention (Adapted)

Cronbach's Alpha	N of Items
0.960	3

From Table 4-40 it is seen that the Cronbach's Alpha if item AI3 (Q22) is deleted is 0.955. This indicates that the deletion of item AI3 would result in a decrease in Cronbach's Alpha from an 0.960 combined value to 0.944. This suggests that item AI3 contributes positively to the overall reliability of the scale. The overall Cronbach's Alpha for the combined scale is 0.960.

Table 4-39: Item Total Statistics – Adoption Intention (Adapted)

Item	Question	Scale Mean if	Scale Variance if	Corrected Item-Total Correlation	Cronbach's Alpha if	Cronbach's Alpha Combined

		Item Deleted	Item Deleted		Item Deleted	
AI2	Q21	12.639	2.597	0.923	0.934	
AI1	Q20	12.621	2.611	0.910	0.944	0.960
AI3	Q22	12.575	2.741	0.910	0.944	

The full results in Tables 4-40 show that the Adoption Intent Scale performs well with Cronbach's Alpha of 0.960 with only three items included. The removal of item AI1, AI2 or AI3 would not improve the Cronbach's alpha over the existing 0.960 in Table 4-53. All Items were without improvement, suggesting that the scale is dependable, and the adjusted item-total correlation was more than 0.3, indicating that the scale is dependable.

Shah et al. (2021) research on Consumer's intention to purchase 5G reported a Cronbach's alpha of 0.778 much lower that the Cronbach's alpha of 0.960 reported in this study.

Based on the above analysis the following scale will be retained.

- ✓ Adoption Intention (Adapted)

Moderation Effect of Fake News Knowledge

Scale: Fake News Knowledge - Adapted

The Fake News Knowledge scale in the study exhibited strong internal consistency reliability, as indicated by a Cronbach's alpha coefficient of 0.831 with five items included, see Table 4-41. This suggests that the five items comprising the scale consistently measured the same underlying construct.

Table 4-40: Reliability Statistics – Fake News Knowledge (Adapted)

Cronbach's Alpha	N of Items
0.831	3

Results from table 4-42 show that all items demonstrated a corrected item-total correlation from 0.570 to 0.819, indicating a moderate to high association with the total score of the scale and well above the minimum of 0.3. However, when examining the internal consistency reliability of the scale, deleting Item FK2 resulted in an increase in Cronbach's Alpha to 0.844 from the initial combined

Cronbach's Alpha of 0.831. This suggests that only minimal improvement will be made is if by deleting item FK2.

Table 4-41: Item Total Statistics – Fake News Knowledge (Adapted)

Item	Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha Combined
FK2	Q30	11.868	5.445	0.616	0.844	
FK3	Q31	11.632	5.463	0.760	0.706	0.831
FK5	Q33	11.779	5.152	0.708	0.750	

Item FK2 was retained since it no significant improvement will be made by deleting the item and the corrected item-total correlation was greater than 0.3, showing that the scale is reliable.

Apuke and Omar (2020) reported a Cronbach's alpha of 0.91 investigating the impact of the moderating role of fake news knowledge in sharing unverified information, this is similar to the Cronbach's alpha of 0.831 reported in this study.

Based on the above analysis the following scale will be retained.

- ✓ Fake News Knowledge (Adapted)

4.3.6 *Converged Validity*

An analysis was performed to assess the convergent validity of the measurement items by further examining the Composite Reliability (CR) values and average variance extracted (AVE).

The calculation of the average variance extracted (AVE) was performed using this formula

$$\mathrm{AVE} = \frac{\sum_{i=1}^{n} L_i^2}{n}$$

The below formula was utilized to calculate the composite reliability

$$CR = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + (\sum \epsilon_i)}$$

Composite Reliability

The scale reliability of several constructs was assessed using Composite Reliability (CR) values, see Table 4-43. The constructs of Adoption Intention (CR = 0.957), Perceived Benefit (CR = 0.876), Perceived Value (CR = 0.901), and Social Influence (CR = 0.923) demonstrated acceptable scale reliability, as their CR values was higher than the recommended threshold of 0.7.

Table 4-42: Composite Reliability

Construct	No of Items	CR.
Adoption Intension	3	0.957
Perceived Benefit	3	0.876
Perceived Sacrifice	3	**0.673**
Perceived Value	3	0.901
Social Influence	3	0.923

However, the construct of Perceived Sacrifice (CR = 0.673) fell below the recommended threshold, indicating lower scale reliability. It is important to consider these findings in conjunction with other measures of reliability and validity to comprehensively evaluate the quality of the measurement instrument.

Average variance extracted

The scales used in the study were evaluated for their validity based on two criteria: Average Variance Extracted (AVE) and the square root of the Average Variance Extracted (Sqrt), see results in Table 4-44. The cut-off values set for validity were a minimum of 0.5 for AVE and 0.7 for Sqrt.

Table 4-43: Validity indicators

Construct	No of Items	AVE	Sqrt
Adoption Intension	3	0.88	0.938
Perceived Benefit	3	0.701	0.837
Perceived Sacrifice	3	**0.412**	**0.642**
Perceived Value	3	0.753	0.868

Social Influence	3	0.802	0.896

Results revealed that the Adoption Intention scale demonstrated good validity, with an AVE of 0.880 and Sqrt of 0.938, surpassing the established cut-off values. Similarly, the Perceived Benefit scale exhibited acceptable validity, as evidenced by an AVE of 0.701 and Sqrt of 0.837.

Additionally, the Perceived Value scale demonstrated satisfactory validity, with an AVE of 0.753 and Sqrt of 0.868, exceeding the established cut-off values. Similarly, the Social Influence scale showed good validity, with an AVE of 0.802 and Sqrt of 0.896, surpassing the predetermined cut-off values.

On the other hand, the Perceived Sacrifice scale did not meet the validity criteria, with an AVE of 0.412 and Sqrt of 0.642, falling below the established cut-off values. Therefore, its validity is questionable.

In conclusion, the Adoption Intention, Perceived Benefit, Perceived Value, and Social Influence scales were found to be valid based on the established cut-off values, while the Perceived Sacrifice scale did not meet the criteria for validity.

4.3.7 *Discriminant Validity*

The criterion proposes that the square root of the average variance extracted (AVE) for every construct should be higher than the correlations between that construct and other constructs in the model. In other words, the average variance extracted (AVE) of a concept should account for a greater portion of its variability compared to the variance it shares with other concepts (Fornell & Larcker, 1981).

Fornell and Larcker (1981) proposes that the square route of AVE (see bold figures in Table 4-45) for each construct should be higher that the correlation of the same construct with any other construct. Results from Table 4-45 suggests that there are no issues concerning discriminant validity.

Table 4-44: Discriminant validity

	AI	PB	PS	PV	SI	FK
AI	**0.938**					
PB	0.410	**0.837**				

PS	0.039	0.308	**0.642**			
PV	0.684	0.569	-0.028	**0.868**		
SI	0.345	0.117	0.084	0.397	**0.896**	
FK	0.283	0.353	0.123	0.308	0.208	**0.801**

4.3.8 *Summary of construct reliability values*

Summary of reliability values and the selected scales for utilization study is presented in Table 4-46. These findings suggest that caution should be exercised when interpreting and using the Perceived Sacrifice scale. While it may still provide some insight into participants' perceptions of sacrifice, its lower reliability indicates a potential limitation in accurately capturing the construct under investigation.

Table 4-45: Summary of selected scales and reliability

Construct	Code	Cronbach's Alpha - Initial	N of Items	Items deleted	Cronbach's Alpha - Adjusted	Selected Scale
Perceived Benefit - Adapted	PB	0.940	3	1	**0.906**	Yes
Perceived Benefit	PB	0.940	4	-	0.940	
Perceived Sacrifice - Adapted	PS	**0.601**	3	1	**0.758**	Yes
Perceived Sacrifice	PS	**0.601**	3	1	0.758	
Perceived Value - Adapted	PV	0.965	3	1	**0.901**	Yes
Perceived Value	PV	0.965	4	-	0.965	
Adoption Intent - Adapted	AI	0.960	3	-	**0.960**	Yes
Adoption Intent	AI	0.960	3	-	0.960	
Social Influence - Adapted	SI	0.931	3	3	**0.919**	Yes
Social Influence	SI	0.931	6	-	0.931	
Fake News Knowledge - Adapted	FK	0.851	3	2	**0.831**	Yes
Fake News Knowledge	FK	0.851	5	-	0.851	

Literature claims that a higher result for Cronbach's coefficient alpha suggests a higher level of measurement scale reliability (Cronbach, 1951). Table 4-46 shows that most the alphas are greater than 0.7 except for the Perceived Sacrifice scale that scored 0.099 lower than the accepted 0.7 minimum requirement as suggested by (Field, 2009; Hair et al., 2013). The specifics of the Cronbach alpha, the adjusted item-total correlation, and Cronbach's alpha if the item is eliminated were also evaluated as part of the testing.

These findings suggest that caution should be exercised when interpreting and using the Perceived Sacrifice scale. While it may still provide some insight into

participant’s perceptions of sacrifice, its lower reliability indicates a potential limitation in accurately capturing the construct under investigation. Further refinement or exploration of alternative measurement approaches may be warranted to improve the scale's reliability and ensure more robust assessments of perceived sacrifice in future research.

The reliability results of each construct are discussed next, beginning with Perceived Benefit, then Perceived Sacrifice, Perceived Value, Adoption Intent, and Social Influence. Finally, the construct measuring Fake news knowledge will be examined.

4.3.9 *Summary of Construct Reliabilities and Validity*

Previously proven scales were employed but had to be adapted to increase model fit. he scales included Perceived Benefited (PB), Perceived Sacrifice (PS), Perceived Value (PV), Adoption Intent (AI), Social Influence (SI), and Fake News Knowledge (FK). Each scale was evaluated based on the scale type, Cronbach's Alpha coefficients (initial and adjusted), the number of items, and whether any items were deleted.

The study assessed six specific constructs using a composite measure approach, see results in Table 4-47. The Perceived Sacrifice construct displayed an AVE value below the recommended limit of 0.5. The Composite Reliability for the Perceived Sacrifice construct fell below the recommended limit of 0.7, Fornell and Larcker (1981) proposes that the if the AVE value is below 0.5 but the CR is greater than 0.6, the construct can be deemed adequate. These findings suggest that caution should be exercised when interpreting results related to the Perceived Sacrifice construct in the results. The rest constructs had acceptable AVE values above 0.5, indicating a stronger relationship between the items and their respective constructs. Adoption Intention, Perceived Benefit, Perceived Value, and Social Influence constructs in this study demonstrated Composite Reliability coefficients above 0.7, suggesting a high level of internal consistency. Results indicate no issues related to the reliability and validity of the constructs, even though the validity measurement of Perceived Sacrifice is low, the analyse

will be continued based on acceptable AVE, CR (Fornell & Larcker, 1981) and Cronbach Alpha values (Cronbach, 1951).

Table 4-46: Summary of reliability and validity indicators

Construct	No of Items	AVE	Sqrt	Composite Reliability	Cronbach Alpha
Adoption Intension	3	0.880	0.938	0.957	0.960
Perceived Benefit	3	0.701	0.837	0.876	0.906
Perceived Sacrifice	3	**0.412**	0.642	**0.673**	0.758
Perceived Value	3	0.753	0.868	0.901	0.901
Social Influence	3	0.802	0.896	0.923	0.919

4.3.10 *Summary of response distribution over scales*

Analysing the distribution of respondents in Table 4-48, it is noted that the variables were measured on scales ranging from 1.00 to 7.00. Perceived Value results showed that the scale started off at 1.50. Social Influence had a minimum of 1.17 and Adoption Intention had a minimum of 2.00. The data varied with standard deviations ranging from 0.81 to 1.40. Most respondents agreed closely with the same perception of Adoption intension. These findings provide insights into the participant's perceptions of perceived benefits, perceived sacrifice, perceived value, adoption intention, social influence, and fake news knowledge.

Table 4-47: Overall Scores of scales

Scale	Valid	Missing	Mean	Median	Std. Deviation	Min.	Max.
Perceived Benefits	140	0	5.8351	6.2500	1.35022	1.00	7.00
Perceived Sacrifice	140	0	4.7571	5.0000	1.39764	1.00	7.00
Perceived Value	140	0	5.6036	5.8750	1.11360	1.50	7.00
Adoption Intention	140	0	6.3024	6.3333	0.81247	2.00	7.00
Social Influence	140	0	5.4083	5.5000	1.24181	1.17	7.00
Fake News Knowledge	140	0	5.7625	6.0000	1.09615	1.00	7.00

4.4 Structural Equation model (SEM)

A structural equation model generated through AMOS was used to test the strength and direction of relationships between the independent Variable and the Dependent Variables.

4.4.1 *SEM Model review*

Model Fit

The model fit was evaluated using the obtained results, and necessary improvements were made by examining the resulting modification indices and making appropriate adjustments. The standardized Regression weight was also evaluated and variable with excessive high loading was removed.

The chi-square test resulted in a score of χ^2 =151.181 (147,856) with 87(120) degrees of freedom. The probability level associated with this result was p = 0.043, suggesting that the obtained chi-square value is not statistically significant at a significance level of 0.05, but only 0.007 from the required cut-off value.

The statistical model showed a good fit to the data, as indicated by several fit indices as per Table 4-49 and meets the model fit criteria (CMIN/DF<3; GFI>0.8: CFI>0.95; RMSEA<0.05; SRMR<0.1 and TLI/NNFI>0.9) as proposed Hooper et al. (2008).

Table 4-48: Model Fit Summary (SEM)

Model	CMIN	CMIN/DF	GFI	TLI/NNFI	CFI	RMSEA	SRMR
Result	151.181	1.738	0.885	0.954	0.962	0.073	0.0424
Range		<2.0	>.90	>.90	≥ 0.95	0.03-0.08	< 0.1
Author			(Hair et al., 2010)	(Tucker & Lewis, 1973)	(Sivo et al., 2006)	(Hair et al., 2010)	(Hair et al., 2010)

The fit indices for the model results shown in Table 4-8 fell within the acceptable range of CMIN/df = 1.738, the goodness-of-fit (GFI) =0.885, CFI=0.962, SRMR=0.1268, except for RMSEA = 0.073 that is not below 0.05.

Squared Multiple Correlations

The squared multiple correlation was 0.35 for Perceived Value, this shows that 35% of variance in Perceived Value is accounted for by Perceived Benefit and Perceived Sacrifice. Additionally, the squared multiple correlation was 0.44 for Adoption Intension, this shows that 44% of variance in Adoption intension is accounted by Perceived Value and Social influence as seen in Table 4-50.

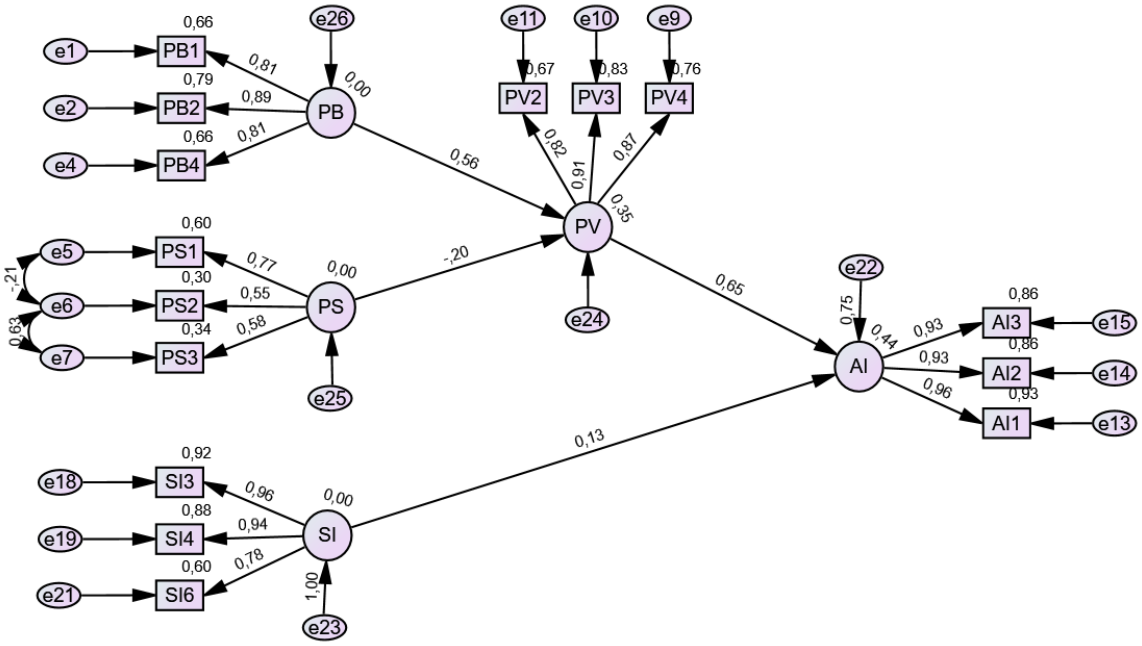
Table 4-49: Squared Multiple Correlations

Construct	Squared Multiple Correlations
Perceived Value (PV)	0.35
Adoption Intensions (AI)	0.44

4.4.2 *Hypothesis Testing*

Results for standardized factor loadings for SEM model is presented in detail below in Figure 4-2 below.

Figure 4-2: SEM Model results



Perceived Benefits, Perceived Sacrifice and Perceived Value

Hypothesis $H1_a$

$H1_a$ - The Perceived Benefits of 5G-enabled services will positively impact the Perceived Value of these services. (Supported and highly significant)

The first part of the study assessed the impact of Perceived Benefit and Perceived Sacrifice on Perceived Value.

The impact of Perceived Benefit on Perceived Value was positive and highly significant (beta = 0.558, t=6.291, P=<0.001) supporting $H1_a$.

These findings indicate a strong positive association between the independent variable Perceived Benefit and the dependent variable Perceived Value, supporting the $H1_a$ hypothesis.

Hypothesis $H2_a$

$H2_a$ - The Perceived Sacrifice of 5G-enabled services will negatively impact the Perceived Value of these services. (Supported and significant)

The impact of Perceived Sacrifice on Perceived Value was weak but negative and statistically significant at $p<0.05$ (beta= -0.198, t= -2.157, P=0.031) supporting $H2_a$.

These findings indicate a statistically significant weak negative influence between Perceived Value and Perceived Sacrifice, thus supporting hypothesis $H2_a$.

Perceived Value, Social Influence and Adopt Intent

Hypothesis $H3_a$

$H3_a$ - The perceived value of 5G-enabled services will have a positively effect on adoption intention of these services. (Supported and highly significant)

The second part of the study assessed the impact of Perceived Value and Social Influence on Adoption Intension.

The impact of Perceived Value on Adoption Intension was positive and significant (beta = 0.654, t= 7.868, P=<0.001) supporting $H3_a$.

These findings indicate a strong positive association between the independent variable Perceived Value and the dependent variable Adoption intension, supporting the $H3_a$ hypothesis

Hypothesis $H5_a$

$H5_a$ - The Social Influence will positively relate to the Adoption Intention of these services. (Rejected)

Further, the impact of Social Influence on Adoption Intension was positive and but not statistically significant (beta = 0.126, t= 1.796, P= 0.072) rejecting $H5_a$.

These findings indicate a statistically insignificant slightly positive influence between Perceived Value and the dependent variable Adoption intension, thus rejecting the $H5_a$ hypothesis.

4.4.3 *Summary of Hypothesis results – Part 1*

In summary, from results in Table 4-51 it is evident that Perceived Sacrifice shows a weak inverse relationship with Perceived Value, Perceived Benefit demonstrates a strong positive relationship with Perceived Value. Furthermore it can be seen that social influence has a weak positive influence, (not statistically significant) on Adoption Intension, and lastly Perceived Value displays a strong positive relationship on Adoption intension.

Table 4-50: Summary of results.

Hypothesis	Conceptual Model			β	t	P	Decision
H1	PS	--->	PV	-0.198	-2.157	0.031	Accepted
H2	PB	--->	PV	0.558	6.291	***	Accepted
H3	SI	--->	AI	0.126	1.796	0.072	Reject
H5	PV	--->	AI	0.654	7.868	***	Accepted

Notes: β = Standardized Regression Weights

The full results for all regression weights can be found in Appendix B – Table 6.

4.4.4 *Moderation Effect of Fake News Knowledge*

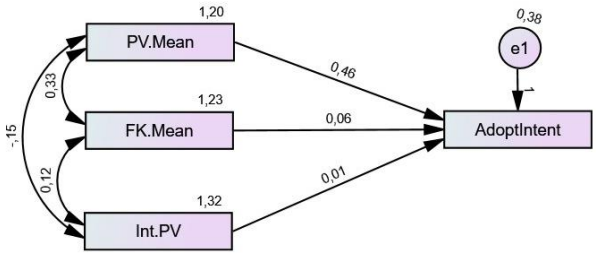
To test the moderation effect of Fake News Knowledge on the relationship between Perceived Value, Social Influence and Adoption Intension respectively two assessment models would be required, and the results will be analysed using SPSS AMOS v28.

Test Interaction between Perceived Value and Fake News Knowledge

Hypothesis $H4_a$

The first model will evaluate the unmoderated effect between Perceived Value (IV), Fake News Knowledge (IV) and Adoption Intension (DV), see Figure 4-3.

Figure 4-3: Moderation model - Perceived Value and Fake News Knowledge



The second model will evaluate the moderated effect between MC_PerceivedValue (mean centred), MC_FakeNewsKnowledge (mean centred) and Adoption Intension, but the interaction term Int.PerceivedValue (Perceived Value (Mean Centred) x Fake News knowledge (mean centred)) will be added as an additional independent variable, as depicted in Figure 4-3.

The study evaluated the moderating function of Fake News Knowledge on the relationship between Perceived Value and Adoption Intension. The results revealed a negative and but not statistically significant moderating effect, that Fake News Knowledge weakens the relationship between CC and OP (Beta=0.015, CR = 0.227, P = 0.82), rejecting H1 based on statistical insignificance.

$H4_a$ – Increased level of Fake News Knowledge dampens the positive effect that Perceived Value has on Adoption Intension. (Rejected)

Results of moderation analysis summary is presented in Table 4-53.

Table 4-51: Moderation - Perceived Value and Fake News Knowledge

Relationship			**B**	**β**	**S.E.**	**C.R.**	**P**
AdoptIntent	<---	PV.Mean	0.46	0.621	0.05	9.158	***
AdoptIntent	<---	FK.Mean	0.063	0.086	0.049	1.271	0.204
AdoptIntent	<---	Int.PV	0.01	0.015	0.046	0.227	**0.82**

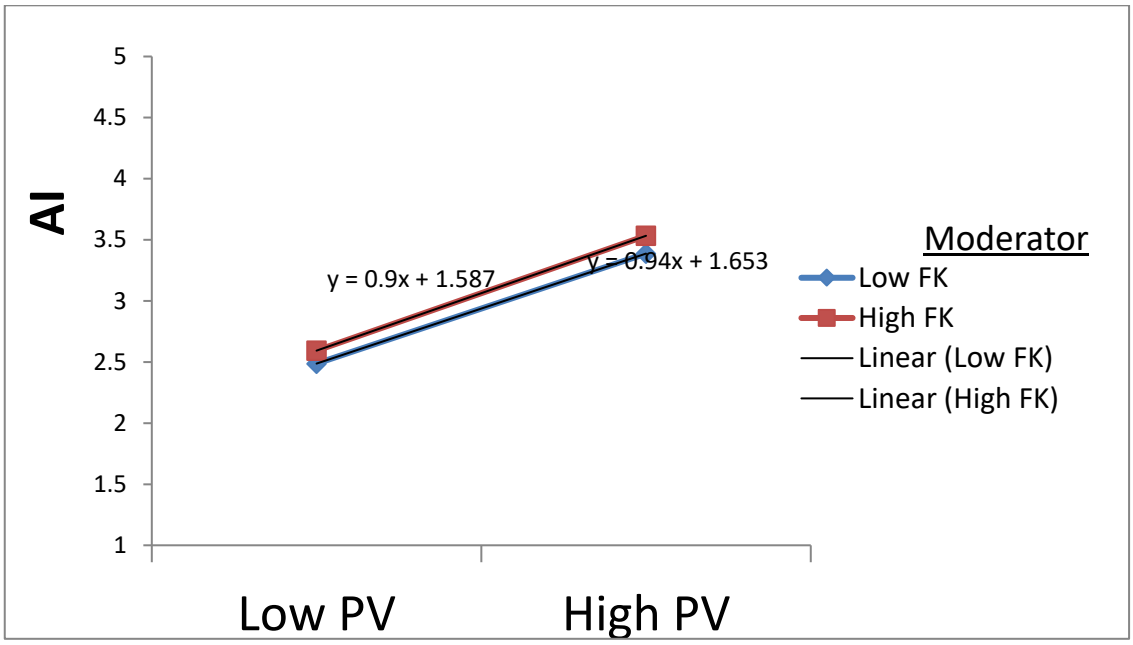
Notes:

β = Standardized Regression Weights

B = Unstandardized Regression Weights

Results of simple slope analysis conducted to better understand the nature of the moderating effects are shown in Figures 4-4.

Figure 4-4: Slope Analysis - Perceived Value and Fake News Knowledge



Notes: AI = Adoption intension, SI = Social influence, FK = Fake News Knowledge

As can be seen in Figure 4-4, the line is much the same angle for Low Fake News Knowledge (FK), this shows that at Low level of Fake News Knowledge (FK), the impact of Perceived Value on Adoption is much the same when compared to high Perceived Value. As shown in Figure 4-4, as the level of Fake news Knowledge increased, the strength of the association between Perceived Value and Adoption increased ever so slightly.

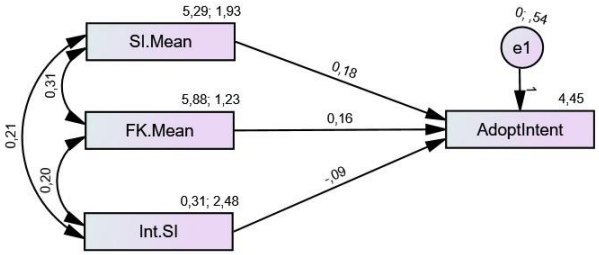
Fake News Knowledge strengthens the positive relationship between Perceived Value and Adoption Intension, but it is not statistically significant.

Test Interaction between Social influence and Fake News Knowledge

Hypothesis H6$_a$

The second model will evaluate the moderated effect between Social Influence, Fake News Knowledge, and Adoption Intension, but the interaction term Int.Social Influence (Social Influence (mean centred) x Fake News knowledge (mean centred)) will be added as an additional independent variable, see Figure 4-5.

Figure 4-5: Moderation model – Social Influence and Fake News Knowledge



The study evaluated the moderating function of Fake News Knowledge on the relationship between Social Influence and Adoption Intension.

Moderation analysis summary is presented in Table 4-54.

Table 4-52: Moderation - Social Influence and Fake News Knowledge

Relationship			B	β	S.E.	C.R.	P
AdoptIntent	<---	SI.Mean	0.182	0.312	0.046	3.967	***
AdoptIntent	<---	FK.Mean	0.155	0.212	0.058	2.691	0.007
AdoptIntent	<---	Int.SI	-0.086	-0.167	0.04	-2.153	0.031

Notes: β = Standardized Regression Weights, B = Unstandardized Regression Weights

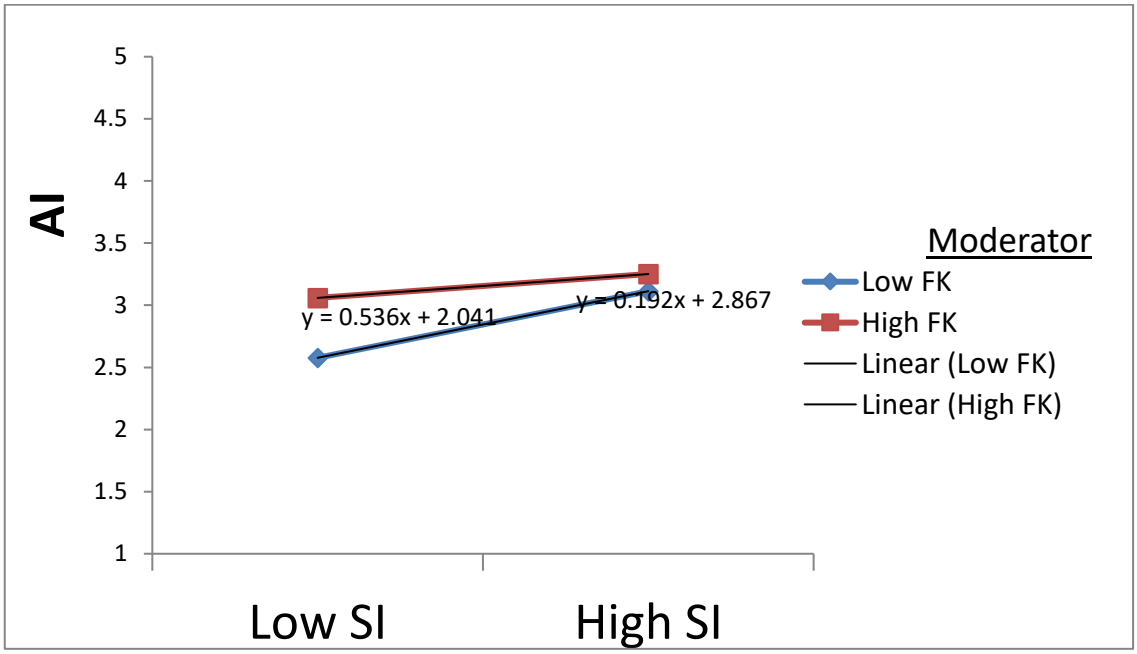
The results revealed a weak negative and but statistically significant ($p<0.05$) moderating effect that Fake News Knowledge weakens the relationship between

H6$_a$ - Increased level of Fake News Knowledge dampens the positive effect that Social Influence has on Adoption Intention. (Supported and Significant)

Social Influence and Adoption Intension (beta=-0.167, CR= -2.153, P=0.031), supporting H6.

Results of simple slope analysis conducted to better understand the nature of the moderating effects are shown in Figure 4-6.

Figure 4-6: Slope Analysis – Social Influence and Fake News Knowledge



Notes: AI = Adoption intension, SI = Social influence, FK = Fake News Knowledge

As shown in Figure 4-6, the line has a higher slope for Low Fake News Knowledge (FK), this shows that at Low level of Fake News Knowledge, the impact of Social Influence on Adoption Intension is much stronger in relationship to high Fake News Knowledge. As shown in Figure 4-6, as the level of Fake News Knowledge increased, the strength of the influence between Social Influence and Adoption Intension decreased.

Fake News Knowledge dampens the positive effect that Social Influence exerts on d Adoption Intension.

4.4.5 *Summary of Hypothesis results – Part 2*

From the summary table 4-55 Fake News Knowledge strengthens the positive relationship between Perceived Value and Adoption Intension (beta = 0.015, p = 0.82). Furthermore it can be seen that Fake News Knowledge dampens the

positive influence between Social Influence and Adoption Intension (beta=-0.167, P=0.031).

Table 4-53: Summary of Moderation results

			B	β	S.E.	C.R.	P
AdoptIntent	<---	Int.PV	0.01	0.015	0.046	0.227	**0.82**
AdoptIntent	<---	Int.SI	-0.086	-0.167	0.04	-2.153	0.031

Notes: β = Standardized Regression Weights, B = Unstandardized Regression Weights

4.4.6 *Summary of the results*

In summary, from results in Table 4-56 it is evident that Perceived Sacrifice shows a weak inverse relationship with Perceived Value, Perceived Benefit demonstrates a strong positive relationship with Perceived Value. Furthermore it can be seen that social influence has a weak positive influence, (not statistically significant) on Adoption Intension, and lastly Perceived Value displays a strong positive relationship on Adoption intension.

Table 4-54: Summary of the results

Hypothesis	Conceptual Model			β	P	Decision
H1	PS	--->	PV	-0.198	0.031	Supported
H2	PB	--->	PV	0.558	***	Supported
H3	SI	--->	AI	0.126	**0.072**	Rejected
H4	Int.PV	--->	AI	0.015	**0.820**	Rejected
H5	PV	--->	AI	0.654	***	Supported
H6	Int.SI	--->	AI	-0.167	0.031	Supported

Notes: β = Standardized Regression Weights, *** = Significant at <0.001

From the summary table 4-56 Fake News Knowledge strengthens the positive relationship between Perceived Value and Adoption Intension. Furthermore it can be seen that Fake News Knowledge dampens the positive relationship between Social Influence and Adoption Intension.

CHAPTER 5. Discussion and Conclusions

5.1 Introduction

The main objective of the study was to analyse factors that may influence the user adoption of 5G-enabled services in a South African context.

To better understand this the research study examined how consumers perceive the value of 5G-enabled service by balancing the sacrifices and benefits linked to these services. Further this perception of perceived value was then measured against social influence experienced by consumer and how the balance between perceived value and social influence would lead to the adoption of these 5G-Enabled service.

Secondly the VAM model was adapted to investigate the impact of how Fake News can change consumers perception of 5G-enabled services was by assessing respondents' knowledge of fake news and investing if it indeed moderated consumers intend to adopt these new services.

5.2 Demographic profile of respondents

The key finding will be discussed here even though the results from the sample characteristics was already presented in chapter 4.

The results pertaining gender distribution was as follow, from the 140 as 63.6% was male, 35.0% was female and 1.4% preferred not to disclose their gender. From the sample only 7% of respondents had a High School education as their highest level of qualifications. The main percentage of the sample having obtained a diploma agree or higher, 25.7% graduated with a degree and 33.6% managed a Postgraduate Degree. This was expected as samples was collected via LinkedIn social media platform dedicated to business professionals and through the university's student registrar. The second largest age group was the 25 to 35 age group at 24%, followed by the 36 to 40 age group that represented 17.9%, if these two groups are combined (i.e. 24 to 40) they would represent 42.2% of the sample group.

From the study conducted by (Shah et al., 2021) that was related to the adoption of 5G in Beijing, China, the gender distribution was relatively balanced, with 50.2% male and 48.5% as female. Similarly to the study in South Africa an 80% the participants higher level of education, and among them, with 35.1% holding bachelor's degrees. From the study more than 80% of them between the ages of 20 and 40 years.

The two sample groups between the two studies relate closely regarding sample education levels but differ significantly when comparing the age groups of the two sample s, with (Shah et al., 2021) showing 80% of responses was between 20 and 40 years old, compared to the 42.2 percent of responses from South Africa being between 24 and 40 years old.

The Sample in this study was skewed to having more male than female respondent (63.6% male, 35.0% female), whereas with (Shah et al., 2021) study in was almost a balanced response between male and female (50.2% male,48.5% female).

5.3 Discussion of Findings

The previous chapter reported the results in two levels of interactions between independent variable, dependent variables, and the linked hypothesis. The same structure will be followed in discussion of the results. Firstly the interaction between Perceived Benefit and Perceived Value how the balance between these two constructs creates the consumers perception of Perceived Value. The focus will then shift to evaluating the connection between Perceived Value and Social influence and how this leads to consumers adoption of 5G-enabled service. Lastly the effect of Fake news and how consumers level of Fake News Knowledge can moderate the relationship between Perceived Value, Social Influence and Adoption intension respectively.

5.3.1 *Perceived Benefits, Perceived Sacrifice and Perceived Value*

The interaction between Perceived Benefit and Perceived Value how the balance between these two constructs creates the consumers perception of Perceived Value and finding from the study will be evaluated in this section.

Perceived Benefits and Perceived Value

Hypothesis $H1_a$

$H1_a$ - The Perceived Benefits of 5G-enabled services will positively impact the Perceived Value of these services.

The hypothesis proposes that the benefits of 5G-enabled services will positively influence the consumers perception of the value these types of service.

From the Beijing study it was found that consistent with the employed VAM theoretical model proving that Perceived Benefits of 5G Technology did positively strong influence on consumers perception pertaining the value they would associate to the use of 5G Technologies (Shah et al., 2021).

Summarily in this study there was also a moderately strong positive influence on consumers perception pertaining the value they would associate to the use of 5G-Enabled service after revieing the benefits that the service would offer them.

Perceived Sacrifice and Perceived Value

Hypothesis $H2_a$

$H2_a$ - The Perceived Sacrifice of 5G-enabled services will negatively impact the Perceived Value of these services.

The hypothesis proposes that the sacrifice that consumer would have to endure be able tom make use of 5G-enabled services will negatively influence the consumers perception of the value these types of service.

The study by (Shah et al., 2021) showed that perceived sacrifice was not an factor when that would be influencing users perceptions of the value of 5G

Technologies. Chong et al. (2010) can to the conclusion that users are prepared to pay for a quality service that a new technology like 3G mobile will offer them.

Even though above studies proved that the Perceived sacrifice was not a considering factor for consumers when determining the value of fast mobile internet access it was still required to test the principles of the VAM model in a South African context.

From the study it was seen that Perceived Sacrifice had a significant weak negative influence on the consumers perception of the value that 5G-Enabled services offer consumers.

The scale used to measure consumers perception of sacrifice was scale that performed reliably in previous studies (Chong et al., 2010); (Shah et al., 2021), but in a South African context the item probing consumer sentiment regarding whether 5G-Enabled services are a waste of time did not perform well and thus also impacting the reliability and validity of the employed scale.

5.3.2 *Perceived Value, Social Influence and Adopt Intent*

Perceived Value and Adopt Intent

Hypothesis $H3_a$

$H3_a$ - The perceived value of 5G-enabled services will have a positively effect on adoption intention of these services.

The hypothesis proposes that the value that consumer believe that the use of 5G-enabled services offers them would positively influence the consumers to adopt these types of services.

Shah et al. (2021) reported the respondents from the Beijing study related to 5G Technologies was positively influence in a weak to moderate way by the perceived value that 5G Technologies offered them resulted in the adoption of these technologies.

In this study within the South African context the findings indicated a strong positive influence by the independent variable Perceived Value to influence the adoption intent of consumers.

Social Influence and Adopt Intent

Hypothesis $H5_a$

$H5_a$ - The Social Influence will positively relate to the Adoption Intention of these services.

Shelvia et al. (2020) studied the effect that social influence would have on consumer to continue to make use of the mobile banking service. This study revealed that consumer was moderately influenced in a positive way to continue to use mobile banking services.

In this study the impact of social influence on the adoption intent for consumers interested in 5G enabled services was tested. Results from this study indicated that the impact of social influence was weak but not statistically significant (Apuke & Omar, 2020).

5.3.3 *Moderation Effect of Fake News Knowledge*

Apuke and Omar (2020) initiated an interesting study to the moderating effect of the level of respondent's knowledge of fake news can act as a moderator influencing the behaviour of respondent in sharing social media articles. The results from the study established that fake news knowledge significantly moderated the effect of perceived herd, SNS dependency, information-seeking, Para social interaction on fake news sharing related to COVID-19.

The moderating effect of Fake News Knowledge was investigated in this study as the release of 5G Technologies coincidentally preceded the outbreak of COVID-19 and sparked the viral spread of fake news sharing about how 5G technologies either enables the spread of COVID-19 or induce COVID-19 like symptoms.

Interaction between Perceived Value and Fake News Knowledge

Hypothesis $H4_a$

$H4_a$ – Increased level of Fake News Knowledge dampens the positive effect that Perceived Value has on Adoption Intension.

The study evaluated the moderating role of Fake News Knowledge on the relationship between Perceived Value and Adoption Intension. Results indicate that Fake News Knowledge strengthens the positive relationship between Perceived Value and Adoption Intension, but it is not statistically significant.

Interaction between Social influence and Fake News Knowledge

Hypothesis $H6_a$

$H6_a$ - Increased level of Fake News Knowledge dampens the positive effect that Social Influence has on Adoption Intention.

The study evaluated the moderating role of Fake News Knowledge on the relationship between Social Influence and Adoption Intension and results indicated that as the level of Fake News Knowledge increased, the strength of the relationship between Social Influence and Adoption Intension decreased.

Fake News Knowledge therefore reduces the positive relationship between Social Influence and Adoption Intension.

5.4 Theoretical Contributions and Recommendations

Adding fake news knowledge as a new moderating factor within the already proven VAM theoretical model did add value by giving some insight on how research can be modelled to investigate interaction of proved research models with new emerging constructs like Fake News knowledge. With the positive results from the study proving the dampening effect of Fake News Knowledge has on the negative effect that Fake News exerts on consumer adoption. Results show potential that this concept can be applied to future research with different

independent variables and adoption intention within the same VAM theoretical model.

5.5 Practical Contributions and Recommendations

From the study it was identified that consumers perception of wat is deemed a sacrifice has changed over time and can't solely be measured in terms of monitory value, it is therefore recommended that more research is done to better understand what consumer see as a sacrifice as the concept of "time is money" might not be applicable to consumers anymore.

Advancement in new technologies like 5G enabled service do offer more value to consumers, in such an extent that the sacrifice required to acquire access to these services are considered in a lesser sense and it is therefore recommended the place the focus the value the service provide, while trying to reduce access cost of subscriptions and handsets.

Results from the study indicates that a high level of fake news knowledge amongst consumers improved adoption intension under consumers and it is therefore recommended that organisations should actively combat the fake news phenomena by growing consumers knowledge related to the identification fake news articles on social media platform with free educational Videos and social media posts, as this would dampen the detrimental effect that fake news has on consumer adoption of 5G-enabled services.

5.6 Limitation of the Study

Even thou this study provided key insights on how consumers value the capabilities of 5G enabled services without even considering the monetary sacrifice to make be able to make use of these service, it must be mentioned that the sample was from a group of highly educated individuals from mainly the Gauteng region of South Africa, with 5G enabled service still very new and only available in the major cities withing Gauteng, KwaZulu Natal and Western Cape regions. Due to delays in the issuing of licenced spectrum best suited for 5G deployment the full Gigabit capability of 5G enabled service was only tested in

the public domain after the data for the study was already collected. As the full capability of 5G is deployed South Africa the public knowledge and user experience of 5G enabled service will also increase and users from rural area would also have access to these service over time.

5.7 Suggestion for further research

Since the study employed the proven and widely used VAM model but now in a South African context, it would be beneficial to conduct more research using the VAM model to give more insight on the performance of this theoretical model in the South African and African context.

More studies can be done with the aim to develop a reliable scale for the measurement of perceived sacrifice with specific consideration of South African consumer, the employed scale had excellent reliability in previous studies but did not perform as well in measuring South African consumers perception of sacrifice.

The effect of social influence on adoption intension can be further explored to provide more insight if social influence would provide similar results in a different context.

With the increasing volume of fake news article and user generated content further study on the moderation effect of Fake News Knowledge in different context can also give valuable insight on how to help consumers and organisation to overcome the negative effects that Fake news may have on consumer adoption in the future.

As the user devices and network access become more widespread the study can be conducted in each of the of the major provinces to provide better insight on the research model’s performance.

With the protection of personal information act in South Africa, the identification of a structured sample frame is difficult and require consumers consent before engaging with users of 5G enables services.

5.8 Conclusion

With the use of the integrated VAM model to analyse factors that may influence the user adoption of 5G-enabled services in a South African context the study has made the following contributions to academic literature.

Firstly, consumers find the benefits that 5G enabled service has to offer as beneficial and this positively influences their perspective of the value that the services have for them. Likewise the study confirms that as hypostasised that the sacrifices that consumers had to endure to make use of these new services did negatively impact consumers perspective of value and this was almost two thirds weaker than the positive influence of perceived benefits. This is a clear indication that the benefits that a 5G-enabled service offer consumer far out ways the sacrifices when it comes to assessing the value of these services.

Secondly, that this newly formed perception of value that consumers attach to this service was positively influencing users in adopt these services, but unfortunately the study was unable to successfully verify the influence that social influence had on consumers intension to subscribe to the services, but indication was that there would only be a minimal positive influence.

Thirdly, the moderation effect that consumers knowledge pertaining the identification of “Fake News” article would their perception of value and social influence that would lead to their adoption of these services. It was proven that the level of consumers understanding of what constitutes fake news did not impact their perception of value and the level of adoption intension remained unchanged.

Lastly, pertaining the moderation effect that knowledge related to the identification “Fake News” articles would lessen the effect that social influence was influencing the adoption of these services, i.e. the higher the consumer understanding of “Fake news”, the less effect it was having in dampening the positive effect of social influence.

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APPENDIX A

Appendix A - Table 1: Consistency matrix - Research objective 1

Analysing key factors considered by consumers before adopting 5g enabled services, in South Africa						
Sub objective	**Literature Review**	**Hypotheses**	**Construct**	**Source of data**	**Type of data**	**Analysis**
Explore how the South African consumer balances perceived sacrifice versus perceived benefits to generate a perceived value leading to consumer's intent to adopt making use of the Value-based Adoption Model (VAM).	(Shah, 2021), (Shelvia, 2020)	H1a - The Perceived Benefits of 5G-enabled services will positively impact the Perceived Value of these services.	Perceived Benefits	Questionnaire Q.9 to Q.12	Ordinal Data Likert scale	SEM Convergent & Discriminant-validity
	(Shah, 2021), (Shelvia, 2020), (Hee-Woong Kim, 2007)	H2a - The Perceived Sacrifice of 5G-enabled services will negatively impact the Perceived Value of these services.	Perceived Sacrifices	Questionnaire Q.13 to Q.16		SEM Convergent & Discriminant-validity
	(Shah, 2021), (Chloe K. H. Lau, 2019), (Hee-Woong Kim, 2007)	H3a - The perceived value of 5G-enabled services will positively impact the adoption intention of these services.	Perceived Value	Questionnaire Q.17 to Q.20		SEM Convergent & Discriminant-validity
	(Shah, 2021), (Chloe K. H. Lau, 2019), (Hee-Woong Kim, 2007)		Adoption Intention	Questionnaire Q.21 to Q.23		SEM Convergent & Discriminant-validity
	(Apuke & Omar, 2020)	H4a – Increased level of Fake News Knowledge dampens the positive effect that Perceived Value has on Adoption Intension.	Fake News Knowledge	Questionnaire Q.30 to Q.34		SEM Convergent & Discriminant-validity

Appendix A - Table 2: Consistency matrix - Research objective 2

Analysing key factors considered by consumers before adopting 5g enabled services, in South Africa						
Sub objective	**Literature Review**	**Hypotheses**	**Construct**	**Source of data**	**Type of data**	**Analysis**
Adapting the existing VAM model to also further study to what extent consumer adoption intent can be affects by social influence presented via social media in the form of "Fake news."	(Shelvia, 2020)	H5a - Social Influence will positively relate to the Adoption Intention of these services.	Social Influence	Questionnaire Q.24 to Q.29	Ordinal Data Likert scale	SEM Convergent & Discriminant-validity
	(Shah, 2021), (Chloe K. H. Lau, 2019), (Hee-Woong Kim, 2007)		Adoption Intention	Questionnaire Q.21 to Q.23		SEM Convergent & Discriminant-validity
	(Apuke & Omar, 2020)	H6a - Increased level of Fake News Knowledge dampens the positive effect that Social Influence has on Adoption Intention.	Fake News Knowledge	Questionnaire Q.30 to Q.34		SEM Convergent & Discriminant-validity

Survey questionnaire

Analysing key factors considered by consumers before adopting 5g enabled services in South Africa

Start of Block: Cover Letter

Dear participant,

I am Hercules du Plessis a Master of Management student at Wits Business School and I am currently conducting research on the adoption of 5G-enabled services in South Africa,

The survey's objective is to research the two topics below:

1. How South African consumers see the Value of 5G-enabled services.

2. How knowledge of Fake News influences South African consumers adoption of 5G-enabled services.

Thanks for taking the time to complete the quick survey that should only take 5 minutes.

All personal data will be securely stored and only used for academic purposes.

Feel free to contact me if you have any further questions.

Submitted by : Jacobus Hercules du Plessis

Student number : 2405473

E-mail address : 2405473@students.wits.ac.za

Mobile number : +27 82 998 9000

Supervisor Name : Michael Sony

Supervisor E-mail : michael.sony@wits.ac.za

Kind Regards

Hercules du Plessis

End of Block: Cover Letter

Start of Block: Informed consent

I hereby confirm that:

- o I will answer the survey questions honestly and to the best of my knowledge.
- o I understand that I am under no obligation complete the survey.
- o I give consent that my responses may be used for academic research.

End of Block: Informed consent

Start of Block: Demographic

Q1. What is your gender?

- o Male

o Female
o No-binary / third gender
o Prefer not to say

Q2. Which of the following represent your age group?
o 18 - 24
o 25 - 35
o 36 - 40
o 41 - 55
o 56 - 90

Q3. What is your education level?
o High School
o Diploma
o Degree
o Postgraduate Degree
o Master's degree and above

Q4. What is your household income per month?
o Less than R10 000
o Between R10 000 - R25 000
o Between R25 001 - R40 000
o More than R40 000

End of Block: Demographic

Start of Block: Device, Network and User

Q5. Do you have a 5G capable device?
o Yes
o No

Q6. Do you have 5G Radio coverage in your area?
o Yes
o No

Q7. Do you currently make use of 5G services?
o Yes
o No

End of Block: Device, Network and User
Start of Block: Perceived Benefits

Q8. To my knowledge, 5G-enabled services are faster.
o Strongly disagree
o Disagree
o Somewhat disagree
o Neither agree nor disagree
o Somewhat agree
o Agree
o Strongly agree

Q9. To my knowledge, 5G-enabled services are of higher quality.
o Strongly disagree
o Disagree
o Somewhat disagree
o Neither agree nor disagree
o Somewhat agree
o Agree
o Strongly agree

Q10. To my knowledge, 5G-enabled services offer excellent user experience.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

Q11. To my knowledge, 5G-enabled services are useful.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

End of Block: Perceived Benefits

Start of Block: Perceived Sacrifices

Q12. I believe that the cost of a 5G-capable handset would be high.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

Q13. I believe that the access fee for using 5G-enabled service would be high.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

Q14. I am convinced in general that 5G-enabled services would cost me allot of money.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

Q15. I am convinced that 5G-enabled services will waste time.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

End of Block: Perceived Sacrifices

Start of Block: Perceived Value

Q16. To my knowledge, the sacrifice of paying for the use of 5G-enabled Service is value for money.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

Q17. Taking into account all of the benefits and drawbacks, I believe that using 5G-enabled services is advantageous to me.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

Q18. Even though 5G-enabled services are new to me, the use of these services is worth-while.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

Q19. Overall I get good value from the use of 5G-enabled services.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

End of Block: Perceived Value

Start of Block: Adoption Intention

Q20. In the future, I plan to use 5G-enabled services.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

Q21. In the future, I intend to use 5G-enabled services.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree

o Strongly agree

Q22. In the future, I can see myself making use of 5G-enabled services.
o Strongly disagree
o Disagree
o Somewhat disagree
o Neither agree nor disagree
o Somewhat agree
o Agree
o Strongly agree

End of Block: Adoption Intention

Start of Block: Social Influence

Q23. People that are important to me are likely to recommend using 5G-enabled services.
o Strongly disagree
o Disagree
o Somewhat disagree
o Neither agree nor disagree
o Somewhat agree
o Agree
o Strongly agree

Q24. People that are important to me are likely to recommend using 5G-enabled services.
o Strongly disagree
o Disagree
o Somewhat disagree
o Neither agree nor disagree
o Somewhat agree
o Agree
o Strongly agree

Q25. People that are important to me would probably that I should make use of 5G-enabled services.
o Strongly disagree
o Disagree
o Somewhat disagree
o Neither agree nor disagree
o Somewhat agree
o Agree
o Strongly agree

Q26. People important to me think that I should make use of 5G-enabled services.
o Strongly disagree
o Disagree
o Somewhat disagree
o Neither agree nor disagree
o Somewhat agree
o Agree
o Strongly agree

Q27. It is expected that people like me would make use of 5G-enabled services.
o Strongly disagree
o Disagree
o Somewhat disagree
o Neither agree nor disagree
o Somewhat agree
o Agree
o Strongly agree

Q28. People that influence my actions believe that I should utilize 5G-enabled services.

- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

End of Block: Social Influence

Start of Block: Fake news knowledge

Q29. I consider news articles about 5G that lack a source to most likely be false.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

Q30. If title of a news report on 5G does not match the content, it is most likely misleading.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

Q31. Some people share unverified information about 5G to boost post views,
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

Q32. I believe that certain 5G news is designed in order to bring harm and disorder to society.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

Q33. Sometimes headlines about 5G on social media are presented in a misleading fashion.
- o Strongly disagree
- o Disagree
- o Somewhat disagree
- o Neither agree nor disagree
- o Somewhat agree
- o Agree
- o Strongly agree

End of Block: Fake news knowledge

APPENDIX B

Appendix B - Table 1: Frequency analyses of collected responses

Item		Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree	Total
PB1	Count	7	1	3	7	14	39	67	138
	Row N %	5.1%	0.7%	2.2%	5.1%	10.1%	28.3%	48.6%	100.0%
PB2	Count	5	2	3	14	19	45	52	140
	Row N %	3.6%	1.4%	2.1%	10.0%	13.6%	32.1%	37.1%	100.0%
PB3	Count	5	1	3	14	18	46	51	138
	Row N %	3.6%	0.7%	2.2%	10.1%	13.0%	33.3%	37.0%	100.0%
PB4	Count	5	2	3	6	16	48	60	140
	Row N %	3.6%	1.4%	2.1%	4.3%	11.4%	34.3%	42.9%	100.0%
PS1	Count	3	1	9	10	40	39	38	140
	Row N %	2.1%	0.7%	6.4%	7.1%	28.6%	27.9%	27.1%	100.0%
PS2	Count	13	18	15	14	32	28	20	140
	Row N %	9.3%	12.9%	10.7%	10.0%	22.9%	20.0%	14.3%	100.0%
PS3	Count	8	20	23	15	29	29	16	140
	Row N %	5.7%	14.3%	16.4%	10.7%	20.7%	20.7%	11.4%	100.0%
PS3	Count	45	59	16	10	2	5	3	140
	Row N %	32.1%	42.1%	11.4%	7.1%	1.4%	3.6%	2.1%	100.0%
PV1	Count	3	7	7	24	30	46	23	140
	Row N %	2.1%	5.0%	5.0%	17.1%	21.4%	32.9%	16.4%	100.0%
PV2	Count	2	3	3	9	20	66	37	140
	Row N %	1.4%	2.1%	2.1%	6.4%	14.3%	47.1%	26.4%	100.0%
PV3	Count	1	2	6	8	22	66	34	139
	Row N %	0.7%	1.4%	4.3%	5.8%	15.8%	47.5%	24.5%	100.0%
PV4	Count	1	3	3	13	22	61	37	140
	Row N %	0.7%	2.1%	2.1%	9.3%	15.7%	43.6%	26.4%	100.0%
AI1	Count	0	1	0	5	11	59	64	140
	Row N %	0.0%	0.7%	0.0%	3.6%	7.9%	42.1%	45.7%	100.0%
AI2	Count	0	1	0	5	11	56	65	138
	Row N %	0.0%	0.7%	0.0%	3.6%	8.0%	40.6%	47.1%	100.0%
AI3	Count	0	1	0	3	11	56	69	140
	Row N %	0.0%	0.7%	0.0%	2.1%	7.9%	40.0%	49.3%	100.0%
SI1	Count	2	4	10	24	18	48	34	140
	Row N %	1.4%	2.9%	7.1%	17.1%	12.9%	34.3%	24.3%	100.0%
SI2	Count	3	2	8	26	24	46	31	140
	Row N %	2.1%	1.4%	5.7%	18.6%	17.1%	32.9%	22.1%	100.0%
SI3	Count	2	6	8	27	21	40	36	140
	Row N %	1.4%	4.3%	5.7%	19.3%	15.0%	28.6%	25.7%	100.0%
SI4	Count	3	3	8	30	18	47	31	140
	Row N %	2.1%	2.1%	5.7%	21.4%	12.9%	33.6%	22.1%	100.0%
SI5	Count	1	2	3	15	19	48	52	140
	Row N %	0.7%	1.4%	2.1%	10.7%	13.6%	34.3%	37.1%	100.0%
SI6	Count	3	7	6	28	20	42	34	140
	Row N %	2.1%	5.0%	4.3%	20.0%	14.3%	30.0%	24.3%	100.0%
FK1	Count	3	3	3	20	19	39	51	138
	Row N %	2.2%	2.2%	2.2%	14.5%	13.8%	28.3%	37.0%	100.0%
FK2	Count	2	2	5	15	20	45	51	140
	Row N %	1.4%	1.4%	3.6%	10.7%	14.3%	32.1%	36.4%	100.0%
FK3	Count	1	2	2	12	15	49	59	140
	Row N %	0.7%	1.4%	1.4%	8.6%	10.7%	35.0%	42.1%	100.0%
FK4	Count	4	7	7	18	14	46	44	140
	Row N %	2.9%	5.0%	5.0%	12.9%	10.0%	32.9%	31.4%	100.0%
FK5	Count	2	2	4	11	20	45	55	139
	Row N %	1.4%	1.4%	2.9%	7.9%	14.4%	32.4%	39.6%	100.0%

Appendix B - Table 2: Descriptive Statistics

Item	Question	Valid	Missing	Mean	Median	Mode	Std. Deviation	Minimum	Maximum
PB1	Q8	138	2	5.93	6.00	7	1.544	1	7
PB2	Q9	140	0	5.74	6.00	7	1.472	1	7
PB3	Q10	138	2	5.76	6.00	7	1.443	1	7
PB4	Q11	140	0	5.93	6.00	7	1.428	1	7
PS1	Q12	140	0	5.51	6.00	5	1.360	1	7
PS2	Q13	140	0	4.41	5.00	5	1.904	1	7
PS3	Q14	140	0	4.34	5.00	5[a]	1.794	1	7
PS3	Q15	140	0	2.23	2.00	2	1.385	1	7
PV1	Q16	140	0	5.15	5.00	6	1.464	1	7
PV2	Q17	140	0	5.77	6.00	6	1.231	1	7
PV3	Q18	139	1	5.75	6.00	6	1.174	1	7
PV4	Q19	140	0	5.74	6.00	6	1.203	1	7
AI1	Q20	140	0	6.28	6.00	7	0.849	2	7
AI2	Q21	138	2	6.29	6.00	7	0.856	2	7
AI3	Q22	140	0	6.34	6.00	7	0.812	2	7
SI1	Q23	140	0	5.37	6.00	6	1.461	1	7
SI2	Q24	140	0	5.34	6.00	6	1.413	1	7
SI3	Q25	140	0	5.31	6.00	6	1.507	1	7
SI4	Q26	140	0	5.30	6.00	6	1.458	1	7
SI5	Q27	140	0	5.86	6.00	7	1.236	1	7
SI6	Q28	140	0	5.26	6.00	6	1.544	1	7
FK1	Q29	138	2	5.68	6.00	7	1.445	1	7
FK2	Q30	140	0	5.77	6.00	7	1.343	1	7
FK3	Q31	140	0	6.01	6.00	7	1.190	1	7
FK4	Q32	140	0	5.46	6.00	6	1.620	1	7
FK5	Q33	139	1	5.88	6.00	7	1.305	1	7

a. Multiple modes exist. The smallest value is shown

Appendix B - Table 3: Missing Completely at Random (MCAR)

PB1	PB2	PB3	PB4	PS1	PS2	PS3	PS4	PV1	PV2	PV3	PV4	AI1
5.94	5.74	5.75	5.93	5.51	4.41	4.34	2.23	5.15	5.77	5.76	5.74	6.28
AI2	AI3	SI1	SI2	SI3	SI4	SI5	SI6	FK1	FK2	FK3	FK4	FK5
6.29	6.34	5.37	5.34	5.31	5.30	5.86	5.26	5.68	5.77	6.01	5.46	5.89

a. Little's MCAR test: Chi-Square = 133,809, DF = 150, Sig. = ,824

Appendix B - Table 4: Missing Value Analysis (MVA)

Item	N	Mean	Std. Deviation	Missing		No. of Extremes[a]	
				Count	Percent	Low	High
PB1	138	5.93	1.544	2	1.4	18	0
PB2	140	5.74	1.472	0	0.0	7	0
PB3	138	5.76	1.443	2	1.4	6	0
PB4	140	5.93	1.428	0	0.0	16	0
PS1	140	5.51	1.360	0	0.0	4	0
PS2	140	4.41	1.904	0	0.0	0	0
PS3	140	4.34	1.794	0	0.0	0	0
PS4	140	2.23	1.385	0	0.0	0	8
PV1	140	5.15	1.464	0	0.0	3	0
PV2	140	5.77	1.231	0	0.0	5	0
PV3	139	5.75	1.174	1	0.7	9	0
PV4	140	5.74	1.203	0	0.0	4	0
AI1	140	6.28	0.849	0	0.0	6	0
AI2	138	6.29	0.856	2	1.4	6	0
AI3	140	6.34	0.812	0	0.0	4	0
SI1	140	5.37	1.461	0	0.0	2	0
SI2	140	5.34	1.413	0	0.0	3	0
SI3	140	5.31	1.507	0	0.0	0	0
SI4	140	5.30	1.458	0	0.0	3	0
SI5	140	5.86	1.236	0	0.0	3	0
SI6	140	5.26	1.544	0	0.0	3	0
FK1	138	5.68	1.445	2	1.4	6	0
FK2	140	5.77	1.343	0	0.0	4	0
FK3	140	6.01	1.190	0	0.0	17	0
FK4	140	5.46	1.620	0	0.0	0	0
FK5	139	5.88	1.305	1	0.7	4	0

Appendix B - Table 5 : Missing Value Analysis – Post Correction

Item	N	Mean	Std. Deviation	Missing		No. of Extremes[a]	
				Count	Percent	Low	High
PB1	140	5.93	1.544	0	0.0	19	0
PB2	140	5.74	1.472	0	0.0	7	0
PB3	140	5.764	1.4337	0	0.0	6	0
PB4	140	5.93	1.428	0	0.0	16	0
PS1	140	5.51	1.360	0	0.0	4	0
PS2	140	4.41	1.904	0	0.0	0	0
PS3	140	4.34	1.794	0	0.0	0	0
PS4	140	2.23	1.385	0	0.0	0	8
PV1	140	5.15	1.464	0	0.0	3	0
PV2	140	5.77	1.231	0	0.0	5	0
PV3	140	5.74	1.171	0	0.0	9	0
PV4	140	5.74	1.203	0	0.0	4	0
AI1	140	6.28	0.849	0	0.0	6	0
AI2	140	6.296	0.8522	0	0.0	6	0
AI3	140	6.34	0.812	0	0.0	4	0
SI1	140	5.37	1.461	0	0.0	2	0
SI2	140	5.34	1.413	0	0.0	3	0
SI3	140	5.31	1.507	0	0.0	0	0
SI4	140	5.30	1.458	0	0.0	3	0
SI5	140	5.86	1.236	0	0.0	3	0
SI6	140	5.26	1.544	0	0.0	3	0
FK1	140	5.664	1.4611	0	0.0	6	0
FK2	140	5.77	1.343	0	0.0	4	0
FK3	140	6.01	1.190	0	0.0	17	0
FK4	140	5.46	1.620	0	0.0	0	0
FK5	140	5.861	1.3155	0	0.0	4	0

Appendix B - Table 6: Regression Weights

Conceptual Model			B	S.E.	C.R.	P	β
PV	<---	PS	-0.197	0.091	-2.157	0.031	-0.198
PV	<---	PB	0.554	0.088	6.291	***	0.558
SI	<---	e23	1.196	0.111	10.795	***	1
AI	<---	SI	0.076	0.043	1.796	0.072	0.126
AI	<---	e22	0.543	0.041	13.186	***	0.746
AI	<---	PV	0.479	0.061	7.868	***	0.654
PS3	<---	PS	1.045	0.108	9.7	***	0.582
PS2	<---	PS	1.045	0.108	9.7	***	0.55
PV2	<---	PV	1				0.818
PV3	<---	PV	1.056	0.083	12.755	***	0.91
PV4	<---	PV	1.042	0.086	12.172	***	0.873
AI3	<---	AI	1				0.925
AI2	<---	AI	1.053	0.053	19.755	***	0.927
AI1	<---	AI	1.085	0.049	22.087	***	0.962
SI6	<---	SI	1				0.778
SI4	<---	SI	1.14	0.09	12.741	***	0.939
SI3	<---	SI	1.204	0.094	12.868	***	0.959
PB4	<---	PB	1				0.811
PB2	<---	PB	1.193	0.085	14.086	***	0.889
PB1	<---	PB	1.156	0.095	12.232	***	0.81
PS1	<---	PS	1.045	0.108	9.7	***	0.772

Notes:

β = Standardized Regression Weights

B = Unstandardized Regression Weights

APPENDIX C

Appendix C - Table 1: 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/DB2405473/522
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

Project title	Analysing key factors considered by consumers before adopting 5G-enabled services in South Africa
Investigator / Researcher	Mr Jacobus Hercules Du Plessis
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed anonymity and confidentiality.
Issue Date of Certificate	2023-01-18
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.

JH du Plessis
Signature

2023-01-19
Date: