



Analysis in how user experience influences consumer attitude towards
VR as a communication medium

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I hereby declare that the Research Report submitted for the BA Honours in Strategic Brand Communication degree to The Independent Institute of Education is my own work and has not previously been submitted to another University or Higher Institution for degree purposes.

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Abstract

The digitalisation of communication is a progressing phenomenon being reflected by the planning and execution of corporate marketing (Hajduk, 2017: 184). Technology is providing a level of immersion and experience that is in the rising interest of the creative communication field (Kauhanen, Turunen & Keskinen, 2017: 1) within the large organisations around the world.

The purpose of this research was to analyse how user experience influences South African consumer attitude towards VR as a communication medium in the gaming industry. The researcher aimed to contribute to the collection of qualitative research with the use of in-depth interviews for the purpose of collecting subjective data to accurately express the untapped potential of virtual environments in the South African context. In-depth interviews were conducted online due to COVID-19 as to protect all parties that participated within the research study. Therefore, the study portrays society's thoughts of innovative technologies' potential to empower socio-behavioural changes whilst advising professionals about consumer attitude being influenced by virtual reality user experience.

The data collection method was deemed appropriate for the research study as the collected data was analysed using thematic analysis, thus enabling the researcher to gain a comprehensive analysis in how user experience influences consumer attitude towards VR as a communication medium. It was found that customer attitude is influenced by user experience when playing virtual reality games. It is important to note that technology engagement triggers emotional response in South African Generation Z consumers due to hyper-personal content, based on the in-game situation as consumers want a user-friendly experience to form favourable interactions with a product.

Key words: communications; consumer behaviour; gaming; user experience; virtual reality.

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Section 1: INTRODUCTION

Structure of the paper

Within this research paper, the researcher provides a clear background of the study and its relevance. The research problem and objectives are outlined and explained in detail. The researcher also provides a synthesis and evaluation of the most relevant literature in the field of innovative communication mediums in the literature review section and conceptualises key concepts for the study in Section 2.

In Section 3, the proposed research methodology is explained and discussed along with the sampling method and units of analysis. Data gathering as well as the data analysis process are thoroughly explained.

Furthermore, in Section 4, the findings are presented in a table format with a discussion towards relevant literature, the proposed research problem, and the research questions and objectives. Whereas in Section 5, the conclusion is made and furthermore, the researcher's recommendations have been suggested.

Contextualisation

The digitalisation of communication is a progressing phenomenon being reflected by the planning and execution of programmes in corporate marketing (Hajduk, 2017: 184). The range of possibilities offered by the Internet and contemporary information technology makes it possible to establish close and lasting relationships with customers and work environments with external partners who make marketing communication more effective.

To establish these relationships, the industry is required to understand the potential virtual reality has as a mainstream consumer product. Therefore, virtual reality is a relatively new creative communication medium allowing artists to build worlds, pixel by pixel (World Economic Forum, 2017). This technology replaces rectilinear devices that depict worlds in ever-expanding concentric circles, providing a level of immersion and experience that has never been seen before. Immersive storytelling in virtual reality is the rising interest in the field of creative communication (Kauhanen, Turunen & Keskinen, 2017: 1) within the well-built organisations around the world. It is

suggested that the strongest demand for these technologies come from creative industries – such as gaming, live events, video entertainment and retail (Digital Plus, 2018), serving as the forefront of changes that will continue in the future.

There has been a rising interest in studying virtual reality technology. As it is relatively new to the South African society, the industry, the graphics, usability, interactivity, and its portability has not stopped improving (Kauhanen *et al.*, 2017: 1). Due to such improvements, VR became a medium that allows businesses and ordinary people to move forward towards the improved resolution, motion sensors and graphic processing. Thus, the number of worldwide VR users have rapidly increased, with up to 171 million active users since 2018; including 28 million consumers who willingly spend their earnings on the games and equipment (The Farm 51, 2015: 11).

The gaming industry has created a significant contribution towards identification, planning and user experience design. Planning and designing requires a substantial effort and collaboration of the multi-disciplinary teams to collectively assess and iterate their designs, suggest changes, and gain confidence before the product reaches the market (Medium, 2017). The utilisation of virtual reality can go beyond the entertainment of video games and the consumption of multimedia. The application of VR technology allows brands and businesses to enhance the user experience by assessing the impact of the interface to minimise the difficulty engaging with a product.

The aim of the study was to analyse how user experience influences consumer attitude towards VR as a communication medium in the gaming industry. The study was conducted in the South African context to explore the phenomena of consumer attitude towards virtual reality within gaming and whether VR could prompt behavioural changes in South African users.

Rationale

Most of the marketing, communication and user experience professionals aim to find the most effective and efficient way to persuade consumers to choose their brand and products (Briñol, Rucker & Petty, 2015: 86; Harmeling, Moffett, Arnold & Carlson, 2017: 313) within the Fourth Industrial Revolution. Thus, the topic was selected to explore the interdisciplinary field of design, computer science, media and

communication to gain insight into how consumer attitudes toward cutting edge technology can contribute to the side of qualitative academic research.

The range of possibilities that are being offered by the Internet and contemporary information technologies make it possible to establish close and lasting relationships with customers. With a deep understanding of the topic, subjective knowledge will facilitate the development of effective marketing communication in the South African context. Such skills and abilities in the industry are becoming crucial components of the in-market brand positioning.

By uncovering how user experience can influence South African consumer attitudes towards VR, the research is necessary to explore and evaluate innovative approaches through the creation and engagement of VR. Therefore, the introduction of new media may aid user's interaction with the innovative approaches, as it allows the development of representative and expressive theoretical models within the technological and communication spheres. Researchers and industry professionals are required to stay relevant in order to demonstrate cutting-edge technology such as VR within communication fields, especially the strategic brand communication field.

Therefore, the rise of immersive technology in South Africa, such as VR in the gaming industry, can potentially enable brands to cut through advertising clutter to reach their identified objectives in the upcoming years.

Problem statement

Most of the marketing, communication and user experience professionals aim to find the most effective and efficient way to persuade consumers to choose their brand and products (Briñol, Rucker & Petty, 2015: 86; Harmeling, Moffett, Arnold & Carlson, 2017: 313). Thus, many marketers and influential brands have raised interest regarding immersive technology's favourable presence in first world countries (Barnes, 2016: 3). However, South Africa has showcased opposition to espouse these innovative technologies. In accordance to Bailenson, Yee, Blasovich, Beall, Lundblad and Jin (2008: 124-130), little-to-no qualitative research has been conducted which accurately expresses the untapped potential of virtual environments or VR. Furthermore, available research undermines the dynamic nature of South Africa's

Generation Z behavioural exchanges and information requirements. Consequently, the introduction of new media may aid user's interaction through novel innovative approaches, as it allows the development of representative and expressive theoretical models within the technological and communication spheres (Rubio-Tamayo, Gétrudix Barrio & García, 2017: 3). This will manifest society's consideration of technologies' potential to empower social changes through the democratisation of information and data comprehension in relation to the South African context.

Purpose statement

Thus, the purpose of this study is to utilise an interpretivist empirical paradigm to provide the reader and other researchers with an in-depth comprehension as to how user experience may influence South African consumer attitudes towards VR as a communication medium in the gaming industry.

Research goal and questions

Research goal

The purpose of this study is to analyse how user experience influences South African consumer attitudes towards VR as a communication medium in the gaming industry. The researcher aims to contribute to the collection of qualitative research to accurately express the untapped potential of virtual environments in the South African context. Therefore, the study portrays society's thoughts of innovative technologies' potential to empower socio-behavioural changes whilst advising professionals about consumer attitude being influenced by user experience.

Research questions

For a researcher to gather an in-depth understanding, the researcher made use of the interpretivist paradigm. Thus, the main research question states:

Why does user experience play a role in one's attitude towards VR technology?

The supporting research questions are:

1. Why can innovations such as virtual reality prompt behavioural changes within South African's Generation Z?

2. Why do Generation Z's encounter a positive consumer attitude towards virtual reality following their gaming experience?

Research objectives

Based on the main and supporting research questions, the research objectives are as follows:

1. To explore if user experience plays a role in one's attitude towards VR technology.
2. To describe why innovation such as virtual reality would prompt behavioural changes within South African's Generation Z.
3. To discuss if one would encounter an attitude towards VR following their experience.

Section 2: LITERATURE REVIEW

Theoretical framework

Attitude theory provides a historic root within the psychological interest of individual diversities. The necessity of this theory for the research is that it supports uncovering concepts which could explain the consistency of individual behaviour across diverse situations (Littlejohn & Foss, 2009: 56). Therefore, attitude theory has played an important role in explaining human action and seeing attitude as a behavioural predisposition in numerous studies. Zimbardo and Leippe (1991) add that specific experiences can be evaluated towards an object, based on cognition, reaction or behavioural intentions which can influence the future cognition, objectives, responses and behaviours.

Modern cognitive psychology sustains that attitude is the result of affective, cognitive responses and experiences based on previous behaviour and intentions. In addition, attitudes can be made based on various forms of judgements, as they are expected to change through experiences and persuasion. Consequently, due to the nature of the study, the chosen classification within the attitude theory is the behaviouristic/ learning theory.

Behaviouristic theory within the communication situation proposes that attitude is learned through reinforcement or congruity (Littlejohn *et al.*, 2009: 57). This means that if the action has been regarded in the past, it is more likely that the attitude towards it will be increased and strengthened.

Theorist, Carl Hovland discovered that proposed opinions are more likely to reoccur, except when an individual goes through a new learning experience (Littlejohn *et al.*, 2009: 57) enabling the advancements in computer, communication and human thought processes (Hurley & Hogan, 2017). According to Littlejohn *et al.* (2009: 57), “... work on attitude formation...” has the most direct association to behavioural thinking in terms of classical conditioning. This can be argued based on the emotional responses that are generated in an individual by events within the environment.

Therefore, this theory provides the researcher with a subjective approach to the study, specifically within the fields of design, computer science and communication. The utilisation of the attitude theory with the focus on the classification – behavioural theory – will enable the understanding of emotional responses within an individual’s behaviour. The theory will facilitate in solving the proposed research questions and objectives, which were predetermined to understand how user experience may influence consumer attitude towards VR as a communication medium in the gaming industry.

Literature review

The literature review consists of three important components, namely: *virtual reality as a communication medium, user experience, and consumer attitude*. The researcher provides a synthesis regarding the elements that have previously been conducted and published by credible seminal authors who contributed to the development of the investigated topic.

The literature shows that virtual reality (VR) can be viewed as a conundrum in relation to various concepts. Steuer (1992: 9) defines it as “...virtual environments, virtual worlds... and synthetic experience”. Virtual reality can be viewed as a communication medium designed to arouse participants, through an interactive computer by offering

those participants a feeling of being mentally immersed within the virtual environment (Sherman, 2003: 13).

Baker's research (2015) predicted that the number of VR headset deliveries would reach 30 million by 2020, driven by the video and gaming industries, as well as VR headset market worth of 62 billion American dollars by 2025 (Barnes, 2016: 8) based on its popularity as it allows people to escape from their physical reality and dive deep into a virtual one.

Minimal research has been conducted on virtual reality as South Africa is a developing country (Bailenson *et al.*, 2008: 124-130). The provided scholarly work may offer a developing framework for local content to emerge. Thus, this study assists in the exploration of the framework and consumer attitude being influenced by the virtual reality user experience of South African consumers.

Virtual reality as a communication medium

As technology develops, the meaning of virtual reality has transformed. Today, virtual reality (VR) can be understood as a computer technology that generates a simulation of the virtual environment, such as video games, in which an individual can undergo the emotion or sense of being present (Serrano, Botella, Baños & Alcañiz, 2013: 649). VR is commonly described as a communication medium designed to arouse the feeling of being mentally immersed (Biocca, 1992: 5) with the use of head-mounted goggles facilitated to the end-user (Coates, 1992).

Consumers race toward new technologies to access or experience things that are not commonly possible. Thus, VR, not dissimilar to other technologies, serves as a platform that delivers information to the end-user (Mazuryk and Gervautz, 1996: 1; Kaplan & Mazurek, 2018). First world countries have shown how VR provides a gateway for marketers to reach consumers in new, innovative means (Van Kerrebroeck, Brengman, & Willems, 2017: 11). If a company gains an advantage from employing VR technology, it will enable major enhancements in their marketing communication as well as in their customers' knowledge of the products being offered (Barnes, 2016:37; Van Kerrebroeck *et al.*, 2017: 5).

Interaction between brands and consumers can be cemented by utilising the methods and tools of modern communication (Hajduk, 2016:194). Szymczak (2019: 58-59) states that “VR is a relatively new medium...” because it offers new opportunities for content communication. Scatena, Russo and Riva (2016: 212) point out the opportunities within the fast-growing market for companies and in which way these companies should make use of new innovative solutions as a communication tool for their advertising.

VR is applicable to a wide range of industries, such as video game entertainment, architecture, healthcare, military, and engineering (Hassounah & Brengman, 2015: 230; Benefield, Rutherford & Allen, 2012) being available with the use of computer desktop, such as Oculus Rift; consoles, Sony PlayStation VR; or headsets in which mobile phones are inserted in, such as Samsung Gear VR (Barnes, 2016:8-9; Pallavicini, Pepe & Minissi, 2019: 3-4). Thus, it can be foreseeable that this trend will spread and expand faster than the Internet and smartphones. For instance, the smartphone industry within South Africa is strongly consumed by the student population (currently Generation Z) (Shava, Chinyamurindi & Somdyala, 2015: 2). These consumers do not need to invest in expensive hardware, they are only required to add appropriate accessories that will change their smartphones into VR devices (Grudzewski, Awdziej, Mazurek & Piotrowska, 2018: 37).

However, the Chinese research company, iResearch, showcased that the VR content companies are struggling to attain income and invest their profits into their creative teams (Shan, 2019: 59) for content development. Creative teams will make the content available on streaming channels or platforms to persuade consumers to embody a positive attitude towards the products. Creating a symbolic relationship or connection between the developed content and immersive technology. This is an essential component in the connection of individual emotional responses and behaviours whilst being mentally immersed.

Consequently, through the utilisation of games and VR devices, companies may receive immediate feedback which, according to Sutton and Ahmed's (2016) research, appears to be more efficient and effective. This is suggested due to the critical knowledge of sharing and exchanging activities during the previous events. Therefore, various studies portray how the vivid and realistic images are the foundation of a

positive attitude among consumers which increases sales (Van Kerrebroeck, 2017: 21). It is suggested that VR offers marketers the opportunity to provide their potential consumers with the most realistic experiences without the necessary physical co-location within reality, such as in video games.

User experience

User experience encompasses the entire user journey, from programming, visual design, and psychology (Rohrer, 2014). The primary goal of user experience is to heighten the accessibility and assist with users' physical limitations when being designed (Norman, 2004). User experience research differs from brand to brand yet requires a designer to advocate and keep all designs and developments consumer centric (Kauhanen *et al.*, 2017: 3).

Advanced, rich and immersive communication technology could potentially deliver high-impact and memorable messages (Barnes, 2016: 3-4). Thus, enabling engagement with audiences and consumers. It is argued that user experience is experienced through dynamic influences through the individuals' responses, resulting in affective and cognitive responses. This can be achieved as user experience may possibly surpass the reality for certain situations which depend on social co-construction, physical and cultural artefacts of the population (Riva *et al.*, 2007: 46).

Serrano *et al.* (2013: 649), Riva *et al.* (2007:51) and Hellweger *et al.* (2015: 3) evaluated in their studies that users' experiences depend on emotions, such as joy, sadness, fear, relaxation or excitement. Thus, technology can be viewed as an enabler that develops user VR experience and engagement. This can be accomplished through gamification, hyper-personal content or environmental cues (Barnes, 2016: 5). Psychological factors will potentially diversify customer preferences within the social VR situations because an individual can relate to others on a social level. As these social situations contribute to the consumers VR experience, it is important to note the fundamental outcomes of the communication. According to Barnes (2016: 5), these are "...affective, cognitive and behavioural (conative) changes at the individual level". Consequently, user experience-centric video games potentially create marketing opportunities in generating revenue (Gajendra, Sun & Ye, 2010: 531).

Therefore, innovative technology systems are put in place to alter the emotional experience of gamers and to enhance the users' senses of being in the game. The literature shows that the VR user experience measurements encompass immersion, presence, involvement and engagement (Anttila, 2018: 11-12; Pallavicini *et al.*, 2019: 5-6; Kauhanen *et al.*, 2017: 2-3).

Presence can be understood according to Slater and Wilburn (1997) as a "...cognitive state that results from information processing in the environment through various stimuli" as it is of most importance in connection to the development and design of entertaining and gratifying VR video games (Pallavicini *et al.*, 2019: 5-6). Video games elicit a higher sense of presence in order to enhance simulation and in-game performance and increase intention towards stimuli that are perceived to belong to reality (Tamborini & Bowman, 2010). Baños *et al.*, (2008) the data showcases that more advanced and sophisticated VR devices can provide higher sense of immersion due to increased sense of presence (Kim, Rosenthal, Zielinski, & Brady, 2014; MacQuarrie & Steed, 2017: 45-50).

For instance, VR video games offer a remarkable user experience for the players (Pallavicini *et al.*, 2019: 4), in relation to traditional video games. VR games will differ from the traditional games based on the level of the immersion and the use of the player's body in which the individual interacts within the virtual world. It is suggested that the emotional experience of gamers enhance the user's sense of being present in the game (Pallavicini *et al.*, 2019: 4). Therefore, VR presence can be understood as a cognitive state of information which is a central connection between the design and development of VR video games (Slater & Wilbur, 1997: 4). One can argue that VR games elicit a strong sense of presence which can potentially enhance emotions and user experience.

Consumer attitude

Consumer attitude is the most influenced when the brand has a unique offering (Parumasur & Roberts-Lombard, 2015: 221). Carvalho [s.a]: 2) states that attitude is seen as "...an enduring organization of motivational, emotional, perceptual and cognitive processes with respect to some aspect of our environment". Ajzen (2008: 252) reported that consumer psychology is concerned with all aspects of the

consumer's purchase decision regardless of every behaviour involving a choice. There are three components of consumer attitude, namely: belief, affect and behaviour intentions (Asshidin, Abidin & Borhan, 2016). Firstly, consumers form a belief about a certain product or object, then they evaluate that object and take an action or behaviour.

Consumer attitude may be understood through a focus group or an in-depth interview to identify various beliefs and feelings about the product expressed by individuals. It is also used to obtain a visual comprehension in which consumers interact with the product (Ajzen, 2008: 253).

The digitalisation of communication in conjunction with Generation Z reflects the way planning and executing marketing communication can be organised (Grudzewski *et al.*, 2018: 38-39). Efficient employment and utilisation of strategic, marketing communication requires tremendous knowledge of social phenomena and market processes. This knowledge serves as the instruments and technologies of information communication. Both, marketing researchers and practitioners, reach an agreement that the key condition for marketing communication to be successful is the integration of all the methods (Grudzewski *et al.*, 2018: 39). For VR content to be managed in space and time, all communication is required to be consistent. One can argue that consistency in terms of the connection between previous events and the development of future events will provide the power to create a behavioural response or attitude in an individual. Thus, a previous study conducted by Iranmanesh and Najafabadi's (2013), points out that people continuously seek knowledge and information which leads to the creation and modification of their consumer attitude towards virtual reality.

The improvement of consumer attitude is considered top priority for 72% of businesses, by creating emotional engagement and experiences during the buyer funnel (Forrester, 2016). Some authors point out that only having an efficient journey is not sufficient; thus, it is crucial to add the design of user experience (Flavián, Ibáñez-Sánchez & Orús, 2019: 554). This is implemented to overcome physical and personal contact between South African consumers and service providers which could result in the creation of stronger customer attitude. Therefore, it can be suggested that the use of the latest technological devices, chat rooms or multiplayer games, can in theory, create new experiences and favourable behavioural responses.

Conceptualisation

This research study aims to gather an in-depth understanding of how user experience influences consumer attitudes toward VR as a communication medium. As the behavioural exchanges and information requirements prevent the apparent society's consideration of VR technologies within the gaming industry.

The key concepts identified consist of *consumer attitude*, *user experience* and *virtual reality*. The researcher will attempt to explain and discuss the importance of these concepts in the research study.

Consumer attitude

Consumer attitude is an indication of one's individual feelings, views and evaluations, which can, for instance, be positive, negative, indifferent, enthusiastic or unpleasant with regards to a product (Parumasur & Roberts-Lombard, 2015: 203). Thus, consumer attitude is when an individual is enduring various feelings towards an idea or product.

User experience (UX)

User experience can be understood as a holistic approach which aspires to provide a balance between the experience a person receives whilst interacting with a product (Hellweger & Wang, 2015: 2). The interaction between a product and the user in the specific context will be influenced by the socioeconomic and cultural factors (Hassenzahl & Tractinsky, 2006: 92). Thus, the user may experience various aspects, including emotions, values and expectations prior to that experience.

Virtual reality (VR)

Virtual reality can be viewed as a communication medium designed to replace participant's physical position and action with the feedback of several senses (Sherman, 2003: 13). VR encompasses electronic simulations of the virtual world experienced through head-mounted goggles facilitated to the end-user (Coates, 1992). Moreover, consumers can achieve value from VR technology, which enhances their lives. Consequently, business and advertisers need to reach these consumers to identify new opportunities and to deliver new ideas to the virtual reality users.

Section 3: METHODOLOGY

Methodology overview

The researcher implemented the qualitative method to conduct this research study. The research was conducted in Pretoria, South Africa with focus on young South African consumers, ages 18 to 25. To collect data, the researcher made use of in-depth interviews and thematic analysis to analyse data.

Research paradigm: Interpretivism

The research study was carried out from an interpretivist paradigm perspective. An interpretivist paradigm was used to place value on the subjective meanings as it provides radical investigation (Pham, 2018: 3-4; Maree *et al.*, 2016: 60) based on the real-life occurrences within the environment being influenced (Du Plooy-Cilliers, *et al.*, 2014: 52). The acquired knowledge is socially structured through subjectivity rather than objectivity (Maree *et al.*, 2016: 59-50).

Consequently, the researcher made use of qualitative data collection within the research approach. The researcher collected data that is equally subjective, empathic and abundant (Cao Thanh & Le Thanh, 2015:25). The researcher then provides an in-depth understanding of the phenomena in the societal context and fulfils the lack of qualitative research conducted. The interpretivist study enables the exploration of people's knowledge, understanding of the topic, and attitudes which have an influence on others and their surroundings. Therefore, the utilisation of the interpretivist paradigm influences society's thoughts of these innovative technologies to potentially empower socio-behavioural changes within the consumer attitude being determined by VR in the gaming industry.

Furthermore, the researcher will discuss epistemological, ontological and methodological positions through the interpretivist paradigm.

The epistemological position

Du Plooy-Cilliers *et al.* (2014: 23) points out that epistemology seeks to understand different ways to gather an insight into human behaviour and people's views. The interpretivist researcher will gather essential information that are required to challenge

the ideals of objective truth and knowledge (Scotland, 2012: 9). Thus, the researcher is able to derive common sense that will guide people's daily lives. Throughout the study, the researcher strives to build bridges for the researcher to analyse society's thoughts of technologies' potential to cause social changes with the use of VR among South African consumers within the gaming industry.

The ontological position

The ontological position is subjectively constructed based on people's perceptions of their experiences, circumstances and culture (Scotland, 2012: 9). Ontology studies look at what social reality is with the assumptions about studied phenomenon (Raddon, [s.a.]: 6). Consequently, it can be understood that ontology is concerned with what reality is. This reality portrays the expression of the untapped potential of virtual reality (Bailenson, Yee, Blasovich & Beall, 2008: 124-130) among South Africa's Generation Z. Therefore, the dynamic nature of behavioural exchanges and information requirements prevents the apparent society's consideration of VR technologies as a communication medium in the gaming industry.

The methodological position

The methodological position of interpretivism serves as a guiding system to effectively solve the proposed problem. The aim of the interpretivist paradigm is to obtain a deeper understanding which is dependent on the comprehension of multiple realities (Ladyman, 2007: 303) through qualitative research. The qualitative research assists the researcher as a primary research method, in which the researcher is able to instruct and communicate with participants about the investigated phenomenon.

Research approach

A research design refers to how a researcher collects and interprets the information (Davis, 2014). Moreover, the selected approach determined the appropriate data collection and analysis methods (Davis, 2014).

The chosen interpretivist paradigm enabled the researcher to achieve a deeper understanding that will depend on the comprehension of multiple realities (Ladyman, 2007: 303) through qualitative research. Consequently, a qualitative approach was employed to ensure an effective apprehension of the topic.

Through observation, a qualitative approach assisted in understanding people within a social and cultural context (Palmer & Bolderston, 2006: 16). It was also suitable as the researcher relied on linguistics rather than statistical data to make use of the data analysis methods as opposed to numerical methods (Nieuwenhuis, 2016). This enabled the researcher to study human experiences and realities from the subject's perspective to ensure an effective apprehension of the VR user experience towards South African Generation Z's consumer attitude in the gaming industry.

The researcher utilised an inductive approach, as qualitative research regards research as inductive (Sauce & Matzel, 2017: 2-3). Inductive reasoning moves from specific towards general which means that when events are observed, they can be combined into generalized statements. Therefore, inductive reasoning was utilised to understand the social phenomena through the subjective behavioural VR experiences of the participants in the gaming industry (Crescentini & Mainardi, 2009: 435; Du Plooy-Cilliers *et al.*, 2014: 14-15).

The open-ended interview with the interviewee of the selected sample population was implemented to collect data. Open-ended discussions enabled the researcher to gather qualitative data in an inexpensive manner (Dube, 2010). As the nature of the time is cross-sectional and contemporary, the researcher was able to collect detailed and empathic data over a short period (Visocky O' Grady & Visocky O'Grady, 2017).

Population

The framework for population characteristics was set as the population was required to be tech-innate Generation Z South Africans, conversant with the Fourth Industrial Revolution, (Jordaan, 2019), and have knowledge of immersive technology and communications.

The target population for the purpose of this research were male and female South African residents who are born between 1995 to 2010 (Nagy, 2017: 112; Arora, Gaidhani & Sharma, 2019: 2806-2808), which are equal to just over 15 million individuals. Therefore, for the purpose of this research study, it is essential to understand this particular target population as they will in the near future earn disposable incomes. By engaging with this targeted segment, the researcher gathered

an understanding of the feelings, perceptions, opinions and motivations of people who have engaged and interacted with virtual reality.

Furthermore, the accessible population consisted of male individuals, who are students aged between 18 to 25 and reside in South Africa. The focus was placed on male individuals as there is a lack of female individuals who play games that will satisfy the criteria in order to participate in the research study and are not as well versed in identified topic. Participants were required to be active consumers within the gaming industry, whether it is on PC or console, fluent in English and belong to any race group. Participants were required to be South African residents as the research study has been conducted to understand the South African Generation Z consumer attitude.

The country of South Africa has been carefully selected due to the researcher's accessibility and South African proximity for the research study. Moreover, this provided the researcher with a population of active gamers who are open to innovation and have knowledge of virtual reality.

Sampling

As this is a qualitative research study, the qualitative approach, therefore, assisted in understanding people within a social and cultural context (Palmer & Bolderston, 2006:16). The researcher relied on linguistics rather than statistical data to make use of data analysis methods as opposed to numerical methods (Nieuwenhuis, 2016). This has enabled the researcher to study human experiences and realities from the subject's perspective to ensure an effective apprehension of the South African Generation Z's consumer attitude towards VR user experience.

The researcher made use of an inductive approach, as qualitative research regards research as inductive (Sauce & Matzel, 2017: 2-3). Inductive reasoning moves from specific towards general which means that when events were observed, they were combined into generalized statements. Therefore, inductive reasoning enabled the understanding of the social phenomena through the subjective, behavioural and virtual reality experiences of the participant in the gaming industry (Crescentini & Mainardi, 2009: 435; Du Plooy-Cilliers *et al.*, 2014: 14-15).

A limited amount of time was made available for the researcher to conduct this study, as well as the limitation in regard to the budget resources. Therefore, for the purpose of this study a small sample of participants has been selected as a means to form a conclusion about the entire population.

The sample for the research study was particularly small and did not involve a random selection of participants such as in probability sampling. This study made use of non-probability sampling. Non-probability sampling is used as a qualitative method, when it is nearly impossible to determine who the entire population is, or when it is challenging to access the entire population (Showkat & Parveen, 2017: 6; Trochim, 2020).

The study made use of non-probability sampling as it is the most useful for the exploratory studies and convenient in selecting a sample in this particular research study (Showkat & Parveen, 2017: 6; QuestionPro, 2020). A fundamental advantage of non-probability sampling is the low costs (Wiśniowski, Sakshaug, Perez Ruiz & Blom, 2020: 121). Thus, non-probability samples were drawn and fielded in numerous inexpensive ways to make the process less complex (Wiśniowski, Sakshaug, Perez Ruiz & Blom, 2020: 121; Showkat & Parveen, 2017: 6). The researcher had budget constraints; therefore, the focus was on a small sample in order to draw a conclusion in relation to the entire population.

The researcher made use of convenience sampling as a means to select participants. Convenience sampling is a type of a non-probability sampling where members of the target population meet the criteria set by the researcher (Etikan, Musa and Alkassim, 2016: 2). Convenience sampling has been used due to the COVID-19 pandemic, as it provides the researcher with an easier access to the participants (Du Plooy-Cilliers *et al.*, 2014: 142). This method is a preferred sampling method among post-graduate students (Taherdoost, 2016: 9) as it is inexpensive and convenient (Elfil & Negida, 2017: 2). This sampling method was explicitly appropriate for the research due to the chosen unit of analysis which can be understood as “who” or “what” for which information will be measured and gathered (Du-Plooy Cilliers *et al.*, 2014: 134; Sedgwick, 2014: 1). Therefore, the units of analysis are more likely to be useful when partaking in the study by providing insightful information compared to other sampling techniques (Sharma, 2017: 752).

One of the convenience sampling disadvantages were that the chosen participants may not be reliable subjects. The researchers' bias could have affected the selection of the participants and the chosen sample as they may not be generalisable or a representative of the larger population (Etikan, Musa and Alkassim, 2016: 2; Rahi, 2017: 3). Consequently, due to COVID-19, time and financial constraints, the researcher made use of convenience sampling regardless of this presented weakness.

Sampling process

For the purpose of this qualitative research and time constraints, the sample size of the in-depth interviews was small. The sample size consisted of 3 participants as this was instructed by the supervisor for the research study. The researcher approached people who fall into the outlined characteristics and who have agreed to participate as a representative sample for this research study.

The researcher had to assure that the participants were eligible to partake in the study, by asking relevant demographic questions from which then they were asked relevant questions for this study. The pilot test was conducted on one female participant to eliminate error allowance.

Only one participant was used for the pilot test study. The pilot test made the researcher aware that within the South African population there is a lack of female individuals who play games and virtual reality games that would satisfy the criteria in order to participate in the study. The female participant only experienced virtual reality once, thus she was excluded from the study. The research was gathered through the use of convenience sampling and the researcher had no further access to female participants who would satisfy the criteria. In fact, this was also established in several studies, such as Anttila's (2018: 27) and Pallavicini, Pepe and Minissi (2019: 11), that male participants are more inclined to provide sufficient knowledge towards this nature of the study. Consequently, due to the researcher's reinforced concern about the sufficient data and ethics, the researcher focused on male South African participants to gather comprehensive understanding of their emotions, user experience and attitude towards virtual reality from a consumer perspective.

Data gathering

The goal of qualitative data collection was to explore and describe the collected data (Pharm, 2015). Thus, there are various methods through which the researcher could collect data from the participants in qualitative research (Du-Plooy Cilliers *et al.*, 2014: 175-192).

In support of the interpretivist paradigm and the previously mentioned research questions and objectives for this study, the researcher made use of in-depth interviews. The in-depth interviews were semi-structured with open-ended qualitative questions in order to gain a deeper comprehension from the small number of participants (Showkat & Parveen, 2017: 3). The nature of an open-ended conversation allowed the participants to provide detailed answers to questions, in order for the gathered information to result in rich and subjective data from a sample of three participants. The questions were made based on emotions, user experience and attitude towards virtual reality from a consumer perspective (Serrano *et al.*, 2013: 649; Anttila, 2017).

Data gathering process

An in-depth interview guide was structured with the use of various sources and content provided from the literature review for this research study. All questions in the interview were set to address the research problem. The set of questions (see Appendix A) have been approved by the IIE (see Appendix B) before the researcher conducted the interviews with the participants. This has assured the ethics of the research study.

After the researcher received the ethical clearance from the IIE (see Appendix B), one female participant was chosen for the pilot study, however, the sample of 3 male participants took part in the actual study. The data collection was conducted in early September 2020, within a period of seven days.

Participants were provided with all the relevant information regarding the research study (see Appendix C), and were asked to fill out a consent form (see Appendix D) and an audio/video recording consent form (see Appendix E) for which he/she agreed to participate and to be recorded in order to ensure the eligibility of each participant and the pilot test participant (Maree, 2016: 44).

Interviews were not conducted in a traditional face-to-face manner due to COVID-19, as a result, the researcher made use of the communication platform, Discord. Discord is a freeware instant messaging and VoIP application used for digital distribution designed to create different communities, such as for gaming, educational or even business purposes (Discord, [s.a.]). This has enabled and allowed participants and the researcher to engage in the interview in a safe and secure manner (Maree *et al.*, 2016: 97).

Each individual interview session begun with the researcher welcoming and thanking the interviewee for dedicating their time and patience to participate in the study. The researcher once again provided a brief overview of the study and participant's requirements. The researcher verified that the participants signed the consent forms for participation (see Appendix D) and for audio to be recorded (see Appendix E). Once the researcher received the confirmation, each participant was asked four preliminary questions in relation to their demographic. The following questions guided participants to describe their encounter with virtual reality when playing PC or console games, from which the researcher continued to ask about their user experience and consumer attitude towards virtual reality.

The researcher made use of literature to guide the set of questions that were presented to the participants. The researcher adapted the questions from the studies done by Witmer and Singer (1998: 234), Anttila, (2018), Pallavincini, Pepe and Minissi (2019: 7), and Kasthuri and Hanyu (s.a.). The researcher grouped semi-structured, open-ended questions into four categories.

The first category's focus was on the participants' demographics in order for the researcher to determine if their characteristics satisfy the criteria. The demographic questions focused on their age group, gender, area they live in, and if they regularly play video games. The second category entailed five questions from which the researcher discussed the participants' consumer attitude towards virtual reality. From the pilot test study, the researcher reformulated the order where question two became question three, and question three became question two (see Appendix A). This was done to formulate a logical flow of questions after the pilot test participant was tested. The third category was comprised of six questions in relation to the virtual reality user's experience. Lastly, the fourth category consisted of four questions in which the

researcher's goal was to explore the user experience connection to consumer attitude as a means to gather more comprehensive understanding.

The researcher and participants engaged in an in-depth conversation to contribute to the collection of qualitative research which accurately expressed the untapped potential of virtual environments in the South African context. Therefore, the study portrays society's thoughts of innovative technologies' potential to empower socio-behavioural changes whilst advising professionals about consumer attitude being determined by user experience. The researcher utilised the approved questions as a guide in order to skilfully promote acknowledgment of the data relevant to the research questions of the study.

All questions and answers from the interview were recorded with the use of the researcher's personal laptop with the help of a recording system, Camtasia. The recording system was tested before the interview started to avoid technical difficulties and not to cause any discomforts for the participants.

The recordings were individually transcribed for further analysis. This enabled the researcher to be aware of the verbal cues as these factors may have had an impact on the way the respondent's answers were perceived and how to deduce meaning from them. Once the session was completed, the researcher expressed sincere gratitude towards each participant.

The chosen data gathering method aided and supported the interpretivist paradigm and its purpose, as the in-depth interviews utilised semi-structured, open-ended questions to analyse social phenomena through the subjective behavioural virtual reality experiences of the participants in the gaming industry.

Data analysis

This was a qualitative research study; thus, qualitative data was transformed into findings (Bezuidenhout & Cronje, 2014). The transformation of data takes place when the researcher identifies, arranges, describes and establishes common themes within the data as a means to achieve an answer to the research question and research objectives (Nowell, Norris, White & Moules, 2017; Bezuidenhout and Cronje, 2014). The most appropriate data analysis method for this research study was for the data to

be processed by being organised into specific themes. Therefore, a thematic analysis was the most suitable option for this qualitative research study.

The thematic analysis allowed the researcher to make sense of the collective meanings and experiences from the collected information (Braun & Clarke, 2012: 3). Thematic analysis is an adaptable method which permitted the researcher to focus on data by analysing meaning across the entire dataset (Braun & Clarke, 2012: 3; Nowell, Norris, White & Moules, 2017). Consequently, it may be argued that the thematic analysis is a widely used method across the epistemologies. This allowed the researcher to observe the perspectives of participants, highlight similarities and to generate insightful unforeseen comprehensions (Nowell, Norris, White & Moules, 2017).

As this was a qualitative research study, the inductive data analysis strategy was utilised to analyse the meaningful and symbolic data through the administered in-depth interviews (Maree, 2016), regarding the exploration, if user experience influences South African Generation Z's consumer attitude towards virtual reality in the gaming industry. The inductive approach served as a systematic procedure to analyse qualitative data in which the analysis was guided by specific evaluated objectives (Thomas, 2006: 238). This was accomplished by supporting the interpretivist paradigm that supported the study.

After the open-ended interviews were conducted and the researcher transcribed the data, the researcher utilised thematic coding (Du Plooy-Cilliers *et al.*, 2014: 241). Thematic coding was employed for thematic analysis of text to use the reduction process to identify themes (Du-Plooy Cilliers *et al.*, 2014: 241). For the purpose of the study, the researcher made use of the inductive coding approach from which the data was drawn from to allow codes to emerge by analysing and examining the transcribed material. The development of codes and themes from raw data provided the researcher with the ability to identify specific meanings from the collected data (Thomas, 2006: 241-242; Du-Plooy Cilliers *et al.*, 2014: 241). This was accomplished by analysing the participants' knowledge, understanding of the topic, as well as their attitudes towards a virtual reality.

The researcher was required to focus on common words, patterns and themes, within the iterative process, which involved continuous repetitive reading through the material. This determined the most dominant patterns which were inductively delivered in the emerging categories that were compared. The analysed data was completed with the use of the researcher's personal laptop by colour-coding the emerged themes, patterns and words.

Data analysis method

The following six steps showcase how the researcher utilised a trustworthy thematic analysis process. The steps have been adapted from Clarke and Braun (2013), and Maguire and Delahunt (2017: 3355-33512):

Step 1: Organisation and preparation of collected data

The researcher secured the audio recordings from the in-depth semi-structured interviews with the use of a recording system, Camtasia, on the researcher's personal laptop. All three recordings were individually transcribed into text with the use of Microsoft Word into a table format.

Step 2: Reading through transcribed material

Interview transcripts were required to be read and re-read in order for the researcher to obtain a general understanding of the gathered information from the recorded interviews with the three participants. The researcher had to read and re-read to gather a thorough understanding before the coding started.

Step 3: Coding transcribed material

Hereafter, the researcher grouped the data together into chunks which were assigned to broader groups of related meaning. The researcher had to revise the transcribed data from the three participants as a means to construct codes from the collected data. The researcher made use of colour coding within Microsoft Word as a means to streamline the process. Each colour showcased the representation of a different code. Thus, the colour coding enabled the researcher to place emphasis as a means to simplify the characteristics of the information.

Step 4: Development of themes or codes

Themes or categories emerged from the raw data as the development of themes has been fostered without a preconceived conceptual framework. The development of themes required a thorough examination and continuous comparison. The codes within the transcript have been highlighted in the same colour if they matched the code, the emphasis was made in relation to one another and they were labelled (see Appendix G). Furthermore, all codes were labelled based on the premise of the literature review previously conducted. The themes predetermined from the literature were virtual reality, user experience, and consumer attitude (see Appendix G).

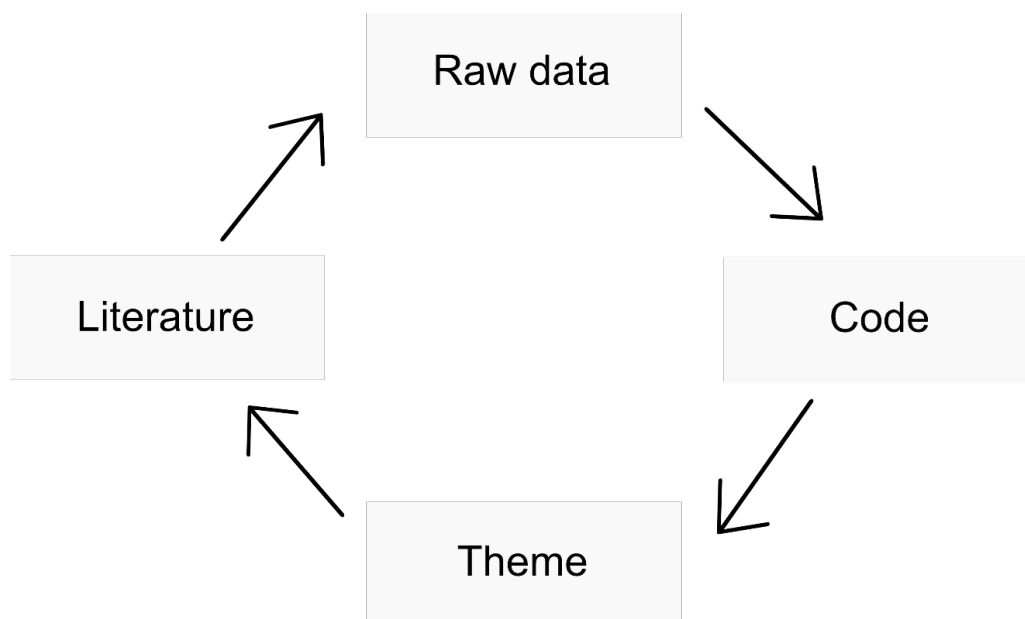


Figure 1.: *Development of themes or codes.*

Step 5: Discussion of themes

The researcher defined and discussed all identified themes which were supported by direct quotes from the participants. Themes were selected and reviewed to ensure that they are relevant and applicable to the research problem in which the researcher analyses how user experience influences South African consumer attitude towards VR. Key themes were named and defined; thereafter, a table was drawn up to present themes which also incorporated quotes from the interviews.

Step 6: Interpretation

The researcher interpreted the findings in relation to the literature and evaluated it according to the identified research questions and objectives for this research study. The researcher reported the findings in a table in order to explain each theme and illustrated how it is connected to the data. Consequently, the collected data had to reflect the research problem and research questions to achieve the research goal. The researcher organised the information in a presentation with the trends and patterns identified from the particular data by showcasing evidence that the balance between the description emerged from the open-ended interview conversation and researcher's interpretation.

Section 4: FINDINGS AND DISCUSSION

After conducting qualitative research with the use semi-structured, in-depth interviews, the data was derived from three participants.

Presentation of findings

The data analysis process was adapted from Clarke and Braun (2013), and Maguire and Delahunt (2017: 3355-33512). Table 1 consists of interview questions and themes that have emerged from coding, codes, quotes from interviews and objectives. The table also addresses the finding based on the identified quotes which were discussed further on. The coding of each in-depth interview has been attached in Appendix H.

Interview question	Theme	Code	Quotes from Interviews	Objectives
How often would you say you play video games?	Virtual Reality as a communication medium	Value	Participant 1: <i>“Everyday! Because it is an escape from reality and... find it to be quite relaxing.”</i> Participant 2: <i>“Everyday.”</i> <i>“...it’s a way to keep myself busy as I don’t have really any form of entertainment... and it’s...something I enjoy doing.”</i> Participant 3: <i>“...not as often I would like to, but... as of lately every two weeks...”</i> <i>“...I just don’t have the time anymore.”</i>	To discuss if one would encounter an attitude towards VR following their experience.
	Finding	It is found that everyday gaming enhances the lives of the Generation Z South Africans as it serves as a form of entertainment.		

Why would you say VR games mostly draw your attention?	Virtual Reality as a communication medium	Product attention	Participant 1: <i>"Its also a fact that I can immerse myself into an experience really..."</i> <i>"...it feels like I'm part of the game..."</i> Participant 2: <i>"...the potential they have and also it pulls me out of... the real world and puts me somewhere else where I can just enjoy the space that I'm in."</i> Participant 3: <i>"...just the realism factor and the excitement if what is going to be, to be honest."</i>	To explore if user experience plays a role in one's attitude towards VR technology.
	Finding	Virtual reality as a product captivates South African Generation Z attention due to its immersiveness and provides consumers with a realistic experiences.		

What elements would you say urge you to experience a virtual reality game?	User experience	Presence	Participant 1: <i>“...my main element that I’m interested in just in fact that I can move around and have my actions mimicked into a virtual space.”</i> Participant 2: <i>“Just the fun side of it... a different way of moving around and...interacting with the game where you will actually have to actually move your arms and hands...”</i> Participant 3: <i>“...the side from the realism that was definitely... the new wave of gaming, the new way of technological gaming... It showed me there was such a wide variety and things I couldn’t expect.”</i>	To describe why innovation such as VR would prompt behavioural changes within the South African’s Generation Z.
	Finding	• South African Generation Z want to play games where they can increase intention towards stimuli that are perceived to belong to the reality.		
How do you frequently find yourself identifying	User experience	Cognitive response	Participant 1: <i>“...I can often find myself relating to the character.”</i>	To discuss if one would encounter an attitude

with the characters in the game?			<i>“...I’m more of a person who goes towards the games where I can create my own persona.”</i> <i>“...it would end up feeling a lot more immersed... That I found very, very, very much enjoyable and I could definitely see myself in that game.”</i> Participant 2: <i>“It feels...much more common in virtual reality game.”</i> <i>“You are in it, you are moving around, you are interacting with the game. You are not a third party sitting outside looking into it and just moving a character...”</i> Participant 3: <i>“...if I’m playing something that appeals to my nature then yes, quite frequently.”</i> <i>“...anything where...I have to create an entire...profile for the character, I’m already invested in and already put my entire life into the game, and get easily depressed when it doesn’t happen like that.”</i>	towards VR following their experience.
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	Finding	South African Generation Z frequently relates to the character in the game as they are within the game.		
Do you think virtual reality games can elicit emotional responses while playing a VR video game?	User experience	Emotional response	Participant 1: <i>“Yes, yes, yes of course. I’m definitely a person who enjoys colours and sound. Typically, that triggers an emotional response for myself. I get very sad, very happy, I can end up crying...”</i> <i>“...you can have one of the greatest and most beautiful experiences... that you would hope to have one day in real life.”</i> Participant 2: <i>“...in the tunnel busy fighting zombies, I...have fear and anxiety.”</i> <i>“...playing another fun, happy game you could feel happiness...”</i> <i>“...I felt very happy playing the game as it was very colourful and like exciting environment... I felt a lot of empathy...”</i> Participant 3:	To describe why innovation such as VR would prompt behavioural changes within South African’s Generation Z.

			<i>“...it has a huge psychological effect on people, and it could help with psychological issues as... with... emotional and mental issues.”</i>	
	Finding	Innovative VR technology engagement triggers emotional responses in South African Generation Z consumers due to hyper-personal content based on the in-game situation.		
How effective do you think user experience is to capture people's attention?	Consumer attitude	Knowledge	Participant 1: <i>“...VR in general is very user friendly, it mostly comes down to developers, ... that need to make it more intuitive and make it more user friendly otherwise... it becomes overbearing and you lose interest much faster.”</i> Participant 3: <i>“...it is important because without user experience they are never gonna know how to really tailor it to everybody's needs and wants.”</i>	To explore if user experience plays a role in one's attitude towards VR technology.
	Finding	The young South African consumers want a user-friendly experience to form favourable interactions with a product.		

Table 1: *Presentation of findings.*

Interpretation of findings in regards to the research questions, objectives and problem being addressed

Theme 1: Virtual reality as a communication medium

The researcher has found that everyday gaming enhances the lives of the South African Generation Z as it serves as a form of entertainment. This findings is supported by a study conducted by Barnes (2016) and Van Kerrebroeck, Brengman and Willems (2017) in which they point out that if companies want to gain an advantage from employing VR technology, it will enable major enhancements in their marketing communication as well as in their customers' knowledge of the products being offered. This correlates with the set objective if one would encounter an attitude towards VR following their gaming experience. Thus, one could deduce that consumers can achieve value from VR technology, which enhances their lives driving high-impact and memorable messages.

Moreover, based on the participants' responses, virtual reality as a product captivates South African Generation Z's attention due to its immersiveness and it provides consumers with realistic experiences. The researcher can compare this finding to the Van Kerrebroeck *et al.* (2017) study that portrays how the vivid and realistic images are the foundation of a positive attitude among consumers which increases sales. This places the focus on what the researcher wants to explore which is, "Does the user experience play a role in one's attitude towards VR technology". Consequently, it can be evident that virtual reality offers marketers with the opportunity to provide their potential consumers with the most realistic gaming experiences without the necessary physical co-location within reality in order to communicate and create an impact on its consumers.

Theme 2: User experience

The researcher has found that South African Generation Z gamers want to play games where they can increase intention towards stimuli that are perceived to belong to reality. This finding proves that the literature of Tamborini and Bowman (2010) in which games elicit a higher sense of presence is correct as they can enhance simulation and in-game performance and increase intention towards stimuli that are perceived to belong to reality. This correlates with the set objective that the researcher wanted to

describe, why innovations such as VR would prompt behavioural changes within South African Generation Z consumers. Therefore, it may be concluded that the perceived sense of presence and the rise of emotional response in consumers in relation to system factors is connected to the level of display immersion when utilising VR.

The following finding ties in with the already mentioned objective and the perceived sense of presence and emotional response. Innovative VR technology engagement triggers emotional responses in South African Generation Z consumers due to hyper-personal content based on the in-game situation. This is supported by the identified literature conducted by Barnes (2016) in which he points out that technology serves as an enabler in order to develop user VR experience and engagement. From this finding, it is evident that psychological factors diversify customer preferences within the social VR situations because an individual can relate to others on a social level through gamification, hyper-personal content or environmental cues. In addition, this adds to the Forrester's (2016) statement in which businesses are required to create emotional engagement and experiences.

South African Generation Z consumers frequently relate to the character in the game as they are within the game. This finding points out how advanced, rich and immersive communication technology can deliver high-impact and memorable messages (Barnes, 2016:3-4). Thus, enabling engagement with audiences and consumers. One could make an argument that user experiences are experienced through dynamic influences through the individuals' responses, resulting in cognitive responses. Consequently, the researcher has come to conclusion that this can be achieved through VR user experiences in gaming situations. One can encounter an attitude following their gaming experience as an objective to this study. This can be argued in relation to the study conducted by Riva, Capideville, Mantovani, Preziosa, Morganti, Villani, Gaggioli and Alcañiz Raya (2007) which points out that the cognitive responses depend on social co-construction, physical and cultural artefacts of the South African Generation Z consumers.

Theme 3: Consumer attitude

The young South African consumers want a user-friendly experience to form favourable interactions with a product. Therefore, South African Generation Z

consumers continuously seek knowledge and information which leads to the creation and modification of their consumer attitude towards virtual reality based on Iranmanesh and Najafabadi's (2013) study. The finding also agrees with Flavián, Ibáñez-Sánchez and Orús's (2019) literature in which the improvement of the design of user experience contributes to the development of the consumer journey. This is a clear indication that user experience plays a role in one's attitude towards VR technology as a physical and personal contact between South African consumers and service providers. It results in the creation of a stronger customer attitude and visual comprehension in which consumers interact with the product (Ajzen, 2008). Therefore, the use of the latest technological devices, chat rooms or multiplayer games can create new experiences and favourable behavioural responses.

Based on the discussed findings, the research question has been answered, thus; all the research objectives have been met. The researcher has fulfilled the research gap and agrees with Rubio-Tamayo, Gétrudix Barrio & García, 2017 which found that the dynamic nature of South Africa's Generation Z's behavioural exchanges and information requirements. Consequently, the introduction of new media aided the user's interaction through innovative approaches and empowers social changes through the democratisation of information and subjective data comprehension in relation to the South African context.

Summary of findings

- Everyday gaming enhances the lives of South African Generation Z consumers as it serves as a form of entertainment.
- Virtual reality as a product captivates South African Generation Z's attention due to its immersiveness and provides consumers with a realistic experiences.
- South African Generation Z consumers want to play games where they can increase intention towards stimuli that are perceived to belong to reality.
- South African Generation Z consumers frequently relate to the character in the game as they are within the game.
- Innovative VR technology engagement triggers emotional response in South African Generation Z consumers due to hyper-personal content based on the in-game situation.

- The young South African consumers want a user-friendly experience to form favourable interactions with a product.

Trustworthiness

The credibility of the study is enhanced by thoroughly defining the convenience sampling process and familiarising with the participants from the in-depth interviews (Du-Plooy Cilliers *et al.*, 2014: 258). This has ensured that the sample is a reliable representative of the population being studied (Anney, 2014: 273). The researcher affirmed to spend substantial time analysing the participants' responses from the standardised, open-ended interviews which ensured the emergence of accurately identified trends and themes from the gathered information.

The gathered information was closely compared to relevant literature that has been previously published (Du-Plooy Cilliers *et al.*, 2014: 258-259) through which the researcher deduced a trustworthy conclusion of the phenomena being studied. Therefore, confirmability ensured that all data collected underpinned the research findings and the interpretation of the collected information (Mandal, 2018: 592). The study was a cross-sectional study in its nature; thus, this did not allow for the researcher to build robust bonds with the participants which would lower the possibilities of bias results.

In terms of transferability, the findings had to be applied to similar situations and provide similar results (Connelly, 2016: 436). Transferability of the study was amplified through in-depth interpretation of the phenomena which provided complete, valuable and purposeful descriptions of the context of the study, research design and participants. In order to enhance dependability, the researcher's study will be stored for future reviews to reflect on the data being acquired (Du-Plooy Cilliers *et al.*, 2014: 259). A documented journal also ensures that any academic party can monitor the nature of the research reasoning (Anney, 2014: 273) and serves as a reflection to the data analysis being carefully documented.

The researcher's relation towards the in-depth interviews did not prohibit participants to alter the interpretation of data in any way nor had personal biases the ability to effect

and influence the research outcomes in order to maximise dependability of the research study (Anney, 2014: 273).

Section 5: CONCLUSION

Implications of findings for further studies

The key contribution of this research study lies in adding in the collection of the qualitative research to accurately express the untapped potential of virtual environments in the South African context.

The study focused on only three participants to collect the qualitative data. Future studies can thus, test this phenomenon on a larger group of the participants to gain a better comprehension of the topic. This research study allows other scholars, researchers and readers to perceive the social construction of understanding and subjective reasoning on how virtual reality user experience can influence South African consumer attitudes as a communication medium. Thus, this research study sought to encourage organisations and society to consider innovative technology to empower social changes through the democratisation of information and data comprehension in relation to the South African context.

As this was a cross sectional study, in which long term effectiveness of the consumer attitude being influenced by VR user experience in the gaming industry was not uncovered. Thus, it may be suggested that upcoming studies place focus on the long-term in which they will potentially uncover consumer attitude being influenced by VR user experience in the gaming industry within South Africa.

Final conclusion

This study was successful in addressing the relevant objectives and answering the research questions. However, the topic or a problem can be researched in greater depth as a means to gather more comprehensive findings and provide more concrete theoretical contributions.

For future research, the following suggestions could be kept in mind for the purpose of enhancing the trustworthiness of the study, as well as enhancing its heuristic value:

It is important to make use of non-probability sampling and a far larger sample as a means to draw a more reliable representative sample which will in due course provide data and information that is generalizable to a larger population in the South African context (Maree, 2016: 192). Furthermore, it may be suggested for the study to be conducted over a longer or extended period of time that will provide more sufficient time for data collection and data to emerge. This is suggested for the purpose of a deeper analysis of subjective and meaningful data that will uncover greater influence of the concepts on one another. It would be interestingly enough if future scholars are able to include a female population to develop insights based on the gender customer attitude being influenced by the user experiences, and potentially uncover different consumer attitudes which can be expanded towards the purchase intention in relation to the communication medium.

It may be suggested that conducting future studies within the various age groups would be of a greater advantage in order to see how user experience may influence consumer attitude towards virtual reality as a communication medium within the South African context. This can potentially develop a greater understanding of different reasoning for consumer attitude across various age groups.

Furthermore, future research can be conducted on this topic from the qualitative reasoning behind the customer attitude as there is a lack of studies in comparison to quantitative reasoning. This can be done to establish the importance of consumers, and the communication medium in which interactivity and responsivity play a fundamental part in the South African context. This can involve focus groups in which the researcher may study their user experience first-hand as they may ask participants why they responded the way they did, or what aspect made them respond the way they did. It would be of the greatest value to scholars as well as specialists in the field of branding, design, computer science, media and communications to understand consumer attitude and reasoning behind their respective levels of engagement, presence and cognitive responses within the virtual simulations such as virtual reality.

Ethical considerations

Ethics concerning participants

The researcher made sure to receive a consent form (see Appendix D) and an audio-recording/ video recording consent form (see Appendix E) from all participants after they have been informed about the purpose and the intent of the study they would participate in (see Appendix C). The obtained consent from the participants was a written permission to be part of the study and make use of gathered data (see Appendix D and E). Given consent was required to be purely on voluntary basis, meaning that there was no incentive given for their participation. The collection of ethical data and practices was kept by ensuring the information learnt about the participants was and will be kept in confidence for time to come. The participant's safety was always held as a priority to the researcher thereby the participants were not placed in any inappropriate or unfavourable situations. All participants were allowed to withdraw from the study at any time.

Ethics concerning the researcher

The researcher was required to operate ethically by avoiding bias throughout the study. Therefore, the following had to be avoided. The fabrication or misuse of the information, avoiding the use of inappropriate methods and misrepresenting the conducted results at any time. The researcher had to assure that the results reflect the true, unbiased responses of the participants. All research tools being used were relevant and respectful to all parties involved when conducting this research study.

Ethics concerning the organisation

The researcher was required to respectfully represent the image of Vega School of Brand Leadership and IIE, for whom this research study is conducted for. The researcher had to ensure that Vega's ethics were upheld throughout the study as the quality of this research is of the highest academic standard set by the IIE. The researcher ensured that all necessary documents were attached and that all consents were obtained from the necessary parties within the IIE institution. Thus, it can be concluded that the research study was conducted in adherence to the IIE research guidelines as well as the ethical clearance provided (see Appendix B).

Limitations to the study

The research study was prone to different limitations. Foremost, this research study was cross-sectional in its nature, meaning that the researcher had limited time available to gather the necessary data and report the findings. The study was also conducted for academic purposes; thus, the study had a word count which limits the detailed analysis and explanations that the researcher was able to provide.

The limited time and financial constraints resulted in the limited accessibility of the small population (Maree *et al.*, 2016:45) as the sample size was 3 participants. It is important to note that one of the major disadvantages of non-probability sampling is that the research findings cannot be generalisable, as the sample for this study was 3 participants. Hence, findings are not entirely representable (Du-Plooy Cilliers *et al.*, 2014:276) and externally valid to the South African population who regularly play games and have previously used virtual reality. The representation of the larger population may not have been possible due to COVID-19; however, the researcher believes that the findings and conclusions are accurate and relevant.

In addition, the research made use of open-ended discussions to allow participants' opinions to vary based on their personal experiences. Thus, it was required from the researcher to be aware of verbal cues that may have had an impact on the way the respondents' answers were perceived and how the meaning was deduced.

The lack of standardisation in the South African context as the understanding of consumer attitude was not optimally designed for the use within South Africa. This was a limitation as the participants' opinions may vary based on their individual experiences regarding VR user experience in the gaming industry. Despite the identified limitations, the researcher has confidence in the credibility, confirmability, transferability and dependability of the study.

Conclusion

Consequently, this research study provided an in-depth analysis in how user experience influences South African consumer attitudes toward VR as a communication medium in the gaming industry. The study was successfully conducted as the researcher answered all the research questions and has reached all research

objectives. When conducting the study, the researcher agrees that customer attitude is influenced by user experience when playing virtual reality games. It is important to note that technology engagement triggers emotional responses in South African Generation Z consumers due to hyper-personal content based on the in-game situation as consumers want a user-friendly experience to form favourable interactions with a product.

The study has potential in the development of further industries which are closely related to design, computer science, media and communications. Therefore, creating the potential to reach individuals within these fields in order to enrich the socio-behavioural aspect for the growth of the country and its development.

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APPENDIX B: Interview guide

Hello and welcome. My name is Sandra Pavic and I would like to thank you for taking your time to participate in this interview. This will be an in-depth interview purely for academic purposes, meaning that no information will be made public and all of the information given will be kept private and in confidentiality. This interview is also purely on voluntary basis and the researcher will not provide an incentive in return.

In order to be eligible to partake to this in-depth conversation or interview, you will be required to be between the age of 18 to 25 years old.

This in-depth interview will take approximately 15 min to complete, therefore, please answer all questions honestly, accurately and detailed as possible.

Set of semi-structured, open-ended questions:

Demographic questions:

1. What is your age?
2. What is your gender?
3. Do you live in Pretoria and which area?
4. What is your occupation?
5. Do you play games?

Consumer attitude towards VR questions:

1. What type of games do you play (Witmer & Singer, 1998:234)?
2. Why would you say VR games mostly draw your attention?
3. How often do you play video games, why?
4. What captures your attention before purchasing a game (Anttila, 2018)?
5. What makes VR games stand out more than non-immersive games (Witmer & Singer, 1998:234)?

VR user experience questions:

1. What elements urge you to experience VR game?
2. When using VR to play games, do you become aware of events occurring in the real world around you (Witmer & Singer, 1998:234)?

3. How frequently do you find yourself closely identifying with the characters in a story line?
4. Do you ever become so involved in a video game that it is as if you are inside the game (Witmer & Singer, 1998:234)?
5. Would you find inconsistent or disconnect if the information comes from your various senses (Witmer & Singer, 1998:234)?
6. Do you think VR games can elicit an emotional response while playing a VR video game (Pallavincini, Pepe & Minissi, 2019:7)?

UX connection to Consumer Attitude questions:

1. In your opinion, how important is user experience development (Pallavincini, Pepe & Minissi, 2019)?
2. In what way do you think user experience can influence your decisions (Anttila, 2018)?
3. How effective do you think user experience is to capture people's attention?
4. Do you find any limitations in VR applications and devices (Kasthuri & Hanyu, [s.a.]?)

Thank you for your time and participation in this research study.

APPENDIX G: Interview transcripts

Interview 1

Interviewer	Hello and welcome. My name is Sandra Pavic and I would like to thank you for taking your time to participate in this interview. This will be an in-depth interview purely for academic purposes, meaning that no information will be made public and all of the information given will be kept private and in confidentiality. This interview is purely on voluntary basis and the researcher will not provide an incentive in return. In order to be eligible to partake to this in-depth conversation and interview, you will be required to be ages between 18 to 25. This in-depth interview will take approximately 15 minutes to complete, therefore, please answer all questions honestly, accurately and detailed as possible. Just before we start, I just want to make sure that you have signed the consent forms for participation and audio to be recorded.
Participant	Yes, I have.
Interviewer	<i>Alright, so what is your age?</i>
Participant	I am 23.
Interviewer	<i>And your gender?</i>
Participant	Male.
Interviewer	<i>Do you live in South Africa and in which area?</i>
Participant	I do, and I live in Pretoria.
Interviewer	<i>Do you play games?</i>
Participant	<i>(laughs)</i> Often.
Interviewer	<i>(laughs)</i> Okay. <i>What type of games do you play?</i>

Participant	Um... pretty much anything. I love MMORPGs, FPS games, um... sometimes puzzle games as well if its intuitive enough. Umm so yeah, quite a bit of VR as well.
Interviewer	<i>Okay. And how often would you say you play video games?</i>
Participant	Everyday! (laughs)
Interviewer	<i>(laughs) Why that often?</i>
Participant	Because it is an escape from reality and I um find it to be quite relaxing.
Interviewer	<i>Okay, and why would you say VR games mostly draw your attention?</i>
Participant	Well... For starters, the technology itself is really interesting to me. I'm really interested in a how technology works and such, to see it progress. Umm. Its also just a fact that I can immerse myself into an experience really. Um, it feels like I'm part of the game if that makes sense. I can role play, I'm very big on role play even in, in the game where role playing isn't really a thing. Um, for example, if you were to play VR um... I'm gonna call it football but it's actually a head-ball. Um, I treat myself as through I'm a sort of a sportsman, you know, and actually fit and handsome (laughs).
Interviewer	<i>(laughs) That's actually cool! What captures your attention before you purchase a VR game?</i>
Participant	Um... Combination of things usually. Um, I, I'm usually made aware of the product by a -a trailer or a YouTuber playing a game for example for Beta or Alpha of the game. Um and if it seems like my sort of a game and I -I develop interest and I start doing research on it and then yeah. If it seems like my kind a thing, I will jump into to it.

Interviewer	<i>Okay. In your opinion, what makes VR games stand out more than non-immersive games?</i>
Participant	Um... So, it really comes down to the fact that it um you can really immerse yourself in VR. Um despite some of the limitations of this point in time. It's still quite easy to makes yourself believe that you are a part of a game due to the fact that you have two of your senses that work. Um so yeah. It really just comes down to the fact that is much easier to immerse yourself and um I really enjoy being able to move around in real life and have the same actions mimicked within a virtual space.
Interviewer	<i>Okay, so basically what elements than you would say that urge you experience virtual reality game?</i>
Participant	Um. I would say the movement side of things is somewhat um restrictive but it's not – I don't know how to explain this. It's not restrictive in the sense that I can still move my hands, wave my hands around. For me that the important thing for me cause I really enjoy sword fighting for example in games like Skyrim VR, I can wave my sword around and slash and slice, cast a spell by using actual movements. It makes me, it's much more intriguing. Then just sitting down and playing on a controller or a keyboard and mouse. So... anything, my main element that I'm very interested in just in fact that I can move around and have my actions mimicked into a virtual space.
Interviewer	<i>When using Virtual Reality when playing games do you become aware of the events occurring in real world around you?</i>
Participant	Yeah. I-I-I'm still fairly aware um but that's only because of the fact that I am a very, very cautious person. So, I do try to be more aware of my surroundings and such just from the pure habit. Um, but let's say if I was in a very safe are and I could feel very relaxed and I had no items around me, no I would not be aware. 100 percent immersed

	if I had a very good area, um and a good surroundings stuff, knowing that - you know- nothing can happen whilst I'm in game. Yes, I can 100 percent immerse myself in the experience then.
Interviewer	<i>Okay! Um how frequently do you find yourself closely identifying with the characters in the game?</i>
Participant	So, it really depends on the game. Um I can often find myself relating to the character, but I typically speaking, I'm more of a person who goes towards the games where I can create my own persona. Um, Skyrim VR is a good example of that so yeah.
Interviewer	<i>Do you ever become so involved in the video game that you are basically inside of that VR game?</i>
Participant	Yes, I do. Especially if I get very excited and um rather like I find it rather unjoyful than I can definitely sense myself in the game. Um and I mean to go back onto the Skyrim VR for example I love it a lot and there was another one Fire something. I can't remember the name... but it was a shooting game, FPS game. It was exciting, so it was very um suspenseful as well, so it would end up feeling a lot more immersed and like you are actually in this like counter terrorist sort of situation where you can take out the terrorists before um before they want to bomb or something. That I found very, very, very much enjoyable and I could definitely see myself in that game.
Interviewer	<i>And would you find inconsistent or a disconnect if the information comes from your various senses?</i>
Participant	Um, are you talking in sense of um graphics quality?
Interviewer	Graphics quality, in terms of the music in the game, does it actually make sense.
Participant	Yeah, yeah. So, um, obviously there is obviously limitations of VR. So, the graphical side of things is troublesome. Um... It's very

	pixelated and that's just how it is. That should change within the next 2 years I would assume. So, um by then I don't think it would be as big of a problem as it's now. Um, to go back onto the Skyrim VR for example if you play on the platform such as PlayStation 4 VR, the quality is much more crunched down than any other platform. So, it gets very blurry and it can make you very sick due to that. So... that was my only, the only game where I really had a lot of issue. Um, in terms of sound, the sound quality is really, really good as long as the development team, the sound designers and dev team do a good job. And um... yeah. I, I really think that's the main things is graphics because like yeah. I mean, innovation is also becoming a really big thing at VR and 3D space sound imaging those sort of things are becoming much more um much more of a big deal than it was. So, again within the next year or two, I expect that to be improved greatly as well even with a very weak sound design team.
Interviewer	<i>So, would you then say virtual games can elicit an emotional response while playing a VR video game?</i>
Participant	Yes, yes, yes of course. Um, I'm definitely a person who enjoys colours and sound. Um so typically that triggers an emotional response for myself. I get very sad, very happy, I can end up crying, you know. I mean in VR it's not great to cry, but (laughs). So yeah. If the story is also really good that's the one up. If you got story, colour and sound um... you can have one of the greatest and most beautiful experiences um that you would hope to have one day in real life (chuckles).
Interviewer	<i>So, another question is in your opinion, how important is user experience development when it comes to virtual reality?</i>
Participant	Yeah, user experience is very, very, very important in general. Um, I, I personally haven't had too much issues with VR, again it really comes down to the developers to create a very friendly user experience. So, VR in general is very user friendly, it mostly comes

	down to developers, like the game studio behind certain games that need to make it more intuitive and make it more user friendly otherwise people do tend to umm...it tends to become overbearing and you lose interest much faster. I'm typically a person who figures things out by himself and tries very hard to figure things out, by just going through it, but I do know many people who get frustrated and they won't ever touch it again kind a thing. Yeah.
Interviewer	<i>Okay, so in what way to you think user experience can actually influence your decisions when you are playing virtual reality game?</i>
Participant	Um, it can greatly, like definitely, 100 percent greatly um influence the experience of a user. Um, if its not user friendly as I said in the past question. Typically, people they don't want to touch it. And even if they did, if it becomes too overbearing, they leave. They won't ever touch it again, they won't return, not without pressure. And you know obviously that's not a great thing to push someone into doing something that they don't want to do. So... yeah. In, in my experience I haven't had too many issues, but I can tell you that if it does get frustrating, I would rather avoid using it than you know. So, it is very, very important that is actually done very well, otherwise it's just a total waste of time. I think it's one of the main things that people should focus on before looking at um, sound design and those sort of things. You can a really great product but if the user interface or you know anything like that just mocks up the user experience completely. SO yeah. In terms of graphics and stuff, those you can put aside. In terms of the functionality the intuitiveness you know those sort of things. Um, if you lack that, the user experience greatly degrades.
Interviewer	<i>Yeah. Okay, another questions is how effective do you think user experience is to capture people attention?</i>

Participant	I think, I think it's fairly important to capture people's attention. Um, I think when you have let say a Twitch streamer for example or a YouTuber showcasing a game, you know, if they enjoy it so its obviously going to attract more people because more people are going to see and they gonna be like oh wow that looks fun. Um I want to that you know. So, that really applies to anything in general, but we can look at a game such as - I mean it's not quite a game- it's more of a social hub. But it's called VR chat, and many YouTubers just stream themselves - you know- just hanging in the VR chat, making jokes and things like that. And I found that a lot of people become interested in this, even introverts. They are like well I can actually be some like um I don't know, I can go as my favourite game into this VR chat and chat to these people and make jokes and have fun, you know without having to actually leave the comfort of my own home. So yeah, - you know- YouTubers, Twitch streamers those sort of things, um user experience definitely has an influence on how many people will come and flock towards you, especially in the age of reviews like on Steam where any person can just leave a review on a game. If you have a bad review, and a bad reputation, um anything below very positive is often kind of disregarded. In my own, personal um... opinion. Um, so it's obviously not true to everybody. Some people will give games with a low score a chance, but I typically avoid them cause I feel as though if this person doesn't enjoy it there is a high chance that I probably not gonna enjoy it either. So, there is a very small chance that I will actually get involved.
Interviewer	<i>Okay! And my last question is do you find any limitations in virtual reality applications and devices?</i>
Participant	Limitations... Um... huh? (coughs). Um, being a person, I am researching a lot about new technology and things. Um, I don't believe there is much limitations as there was maybe 2 years ago.

	The constraints of cabling and things like that are slowly going away in favour of um streaming from your PC to your VR device itself because of 5 gigahertz lines for example. So, you can stream with minimal latency and um its literally from your computer to the VR headset. And you know, the range is obviously a whole different ball game that you can extend obviously all different things. So, it can have a completely wireless experience. Um... I... I'm not really too into the whole walking around simulation sort of a thing. I like the idea of being able to move, but I don't think it's necessary to have to walk in real life to a different area in VR which is already it's something that's kind of done. You can do minimal area – you know distance walking. Um, so yeah. I think, I don't really believe there is any real limitations considering that is also being used in architectural, um architectural companies and thing to collaborate with other architectural firms or other business and they invite these people remotely to join into the session in VR and look at what the buildings look like and have meetings and things in VR. So, I don't think there is any limitations, in that regard. I think a lot of the time the limitations are just there as bottleneck so they can make profit of the next – you know – the next thing. Cause you don't really sell your best product from the get-go, because you have to come up with something even better and I that period of time you can lose a lot of money. So, its kind of like that whole bottleneck scenario where one person releases this, okay. Then they already got to plan for the next one, and release that. So, there is no real um limitations in that sense. I think there will definitely be a lot more coming out in the next 3 years again. Um, 8K VR is already a thing and it's been utilised in many high, high-high-high um ranking companies, so yeah.
Interviewer	Okay! Um that would be all. I just want to thank you again your time and participation in this research study, and yeah!
Participant	No problem!

Interview 2

Interviewer	Hello and welcome. My name is Sandra Pavic and I would like to thank you for taking your time to participate in this interview. This will be an in-depth interview purely for academic purposes, meaning that no information will be made public and all of the information given will be kept private and in confidentiality. This interview is also purely on voluntary basis and the researcher will not provide an incentive in return. In order to be eligible to partake to this in-depth conversation or interview, you will be required to be between ages 18 to 25. This in-depth interview will take approximately 15 minutes to complete, therefore, please answer all questions honestly, accurately and detailed as possible. Just before we start, I just want to make sure that you have signed the consent forms for participation and audio to be recorded.
Participant	Yes.
Interviewer	<i>Okay, what is your age?</i>
Participant	My age is 20 years old.
Interviewer	<i>What is your gender?</i>
Participant	My gender is male.
Interviewer	<i>And, do you live in South Africa and in which area?</i>
Participant	I live in Johannesburg, Boksburg.
Interviewer	<i>Do you play games?</i>
Participant	Yes, I do.
Interviewer	<i>Okay. So, what type of games do you play?</i>
Participant	I generally play first person shooter games, more battle royal and I also enjoy, adventure games, 3 rd person game. Um yeah.

Interviewer	<i>And how often would you say you play video games?</i>
Participant	Everyday.
Interviewer	And why is that?
Participant	Because I live by myself. I don't have a family that I live with at the moment and it's a way to keep myself busy as I don't have really any form of entertainment other than a TV and it's also something I enjoy doing. Helps me pass the time and keep my brain active.
Interviewer	<i>Okay! Why would you say VR games mostly draw your attention?</i>
Participant	The draw my attention mostly because of the potential they have but also it pulls me out of, out of the real world and puts me somewhere else where I can just enjoy the space that I'm in. And I um, don't need to worry, I don't need to worry about anything else that is happening around me. I can just be in my own space, enjoy it. Whatever is around me and what I can see in here and yeah. That's it.
Interviewer	<i>Okay, so, what captures your attention before you purchase a VR game?</i>
Participant	Um, what captures my attention is the firstly the type of the game it is and also the how you play it.
Interviewer	<i>And in your opinion, what makes VR games stand out more than non-immersive games?</i>
Participant	Well, it's the immersiveness of the game that stands out for me. It's the fact that you can go into the game, you can turn your head, you can look around, you use different mediums. Its just something different and much more immersive than what we are used to using, such as keyboard and mouse, and looking at the small screen. Here

	you feel the view is more wider, you don't need to turn the mouse to look around its just more enjoyable.
Interviewer	<i>Okay, so what elements than you would say that urge you experience virtual reality game?</i>
Participant	Just the fun side of it, the... yeah! Just... not having to worry about anything else type of thing (<i>chuckles</i>). I also just find It easier to, well not easier but its just a different way of moving around and different way of interacting with the game where you will actually have to actually move your arms and hands, and physically use the controller to pick up an object and move your arm to place it somewhere else, or interacting with a little person or a little robot or you are busy holding a gun and shooting something. Its... You are much more engaged in a game, you are not just moving a mouse and clicking a button.
Interviewer	<i>When using Virtual Reality when playing games do you become aware of the events occurring in real world around you?</i>
Participant	I do not because I cannot see the events in the real world me, and I cannot hear the events in the real world me. I am completely immersed in a game
Interviewer	<i>Okay! And how frequently do you find yourself closely identifying with the characters in the game?</i>
Participant	Um... I feel its much more, much more common in the virtual reality game because when you are not in the virtual reality you are looking at the screen. Whereas when you are playing virtual reality games you feel like you are actually part of the game. You are in it, you are moving around, you are interacting with the game. You are not a third party sitting outside looking into it and just moving a character or something, you are actually a part of the game.

Interviewer	<i>Do you ever become so involved in the video game that you are inside of that VR game?</i>
Participant	Yes! It does happen quite often as <i>(laughs)</i> - well its quite easy to explain as you are actually inside of the game. That was worded in my previous, in the previous answer. But you are interacting a lot more and yeah!
Interviewer	<i>Would you find inconsistent or a disconnect if the information comes from your various senses?</i>
Participant	If by that you mean more senses than sight and, and, um, basically sound. Those are the two main that you get. So, its much more difficult to emulate of a senses which is touch, smell, I mean we are not going to taste much in a VR game <i>(laughs)</i> . It much more difficult to be simulating smells and touch, but if you could, it would make the game much, much more realistic. Feelings, so, even like something like gloves or using soundwaves or that type of thing to actually give feedback to your, to your hands or something like that to... That would make it much, much more immersive.
Interviewer	<i>Okay! And do you think virtual games can elicit an emotional response while playing a VR video game?</i>
Participant	Yes definitely! As I said before, you are part of the game. It definitely can experience some emotions.
Interviewer	<i>What emotions would you say you can um experience?</i>
Participant	Well, it depends a lot on the game that you are playing. If you are playing a like let's say, like a first-person shooter game and you are in the tunnel busy fighting zombies, I mean you could maybe have fear, anxiety. Or if you are laying another fun, happy game you could feel happiness or that type of thing and I mean, yeah. If you are

	playing adventure games you can feel excited or you can feel to look forward to, meeting someone else or that type of thing.
Interviewer	<i>Have you experienced any of those emotions?</i>
Participant	I have! I have very recently played a game on PS4 VR where I experienced, I, I felt very happy playing the game as it was very colourful and like exciting environment that I was in. And I felt a lot of, I don't know what words to use but I think it was empathy for this cute little character that I was controlling (<i>laughs</i>).
Interviewer	<i>(laughs) Okay! And in your opinion, how important is user experience development when looking at VR?</i>
Participant	I think the user development experience is very, very important. Where VR is at the moment is impressive, but it has much, much more potential. For example, the resolution of the screen used in the VR headset, it can definitely be improved but with the improvement of that comes the, the requirement for more powerful um hardware to run the, to run the software that's required and all the extra details and everything. And... sound quality is there, they don't really need to worry to much about that but also, I think a big development that should be looked at, at least even if is primitive at the moment is um touch feedback. So, using gloves or um I've seen some concepts where they actually use soundwaves, concentrated soundwaves to actually make it feels as you have something in your hand. So, that is definitely something that does need to be developed. It is, I don't want to say primitive, but it has a lot more potential than where is at the moment.
Interviewer	<i>Okay. In what way to you think user experience can influence your decisions in the VR game?</i>
Participant	Well. I mean, if you take it even further then just being able to touch things. If you have um something like pen added into it (<i>chuckles</i>) it would definitely influence your decisions. Like, lets say for example

	your character needs to jump off something and then if you could experience that pain, you would definitely think twice about doing it or think twice about being attacked by something, you would be much more cautious. Whereas with something else you might not be when you are lacking those sort of thing.
Interviewer	<i>So, how effective do you think user experience is to capture people attention?</i>
Participant	Well I think, I have't heard of many, many places where you can professionally taught how to use VR and working with the development VR. So, there much more applications that it can be useful that is not. I am aware that um some applications as a good example in architecture now. When you go do architecture at Technicon, you actually learn how to design houses using like in 3D and you can do a tour of your house, your virtual house with the VR headset. So, that's one application that I know of and the possibility are so much lack of it that I haven't actually seen in South Africa. I don't know if that's because of lack of funding or because there is actually a lack of people that know how to do it. Yeah! There is a lot of room for improvement. There is a lot.
Interviewer	<i>So, my last question is do you find any limitations in virtual reality applications and devices?</i>
Participant	So... Well basically in a headset itself I know there are limitations. It's like I said earlier (<i>chuckles</i>) the resolution of the screens that are used. Um you need more powerful hardware to run high resolution screens as there a two screens in a headset.
Interviewer	<i>Would you say that would affect your attitude towards VR?</i>
Participant	Yes definitely. If, if, if the devices were further, more advanced then where they were at the moment. I mean at the moment it does feel still where we are in the begging stages of VR. It's still something we are getting used to. If it was much more advanced and stuff like that

	and if I had money to spend a lot on the whole setup, I would. But at the moment, spending a lot of money on the setup like that at the point where we are there is a lot more room for improvement. It can get much better, but we just need to work on it. If, if for example they looked more realistic and those sort of things, I would defiantly go and buy it. It would appeal to me much more than it does at the moment. Not that it doesn't appeal to me now. I'm very excited about VR, I really like it, but there is just so much potential that isn't there at the moment.
Interviewer	Okay! Thank you again your time and participation in this research study I really appreciate it!
Participant	It is a pleasure!

Interview 3

Interviewer	Hello and welcome. My name is Sandra Pavic and I would like to thank you for taking your time to participate in this interview. This will be an in-depth interview purely for academic purposes, meaning that no information will be made public and all of the information given will be kept private and in confidentiality. This interview is also purely on voluntary basis and the researcher will not provide an incentive in return. In order to be eligible to partake to this in-depth conversation and interview, you will be required to be ages between 18 to 25. This in-depth interview will take approximately 15 minutes to complete, therefore, please answer all questions honestly, accurately and detailed as possible. (um) Just before we start, I just want to make sure that you have signed the consent forms for participation and audio to be recorded.
Participant	Yes, I have signed both forms.
Interviewer	<i>Okay, so what is your age?</i>

Participant	My age, I am 25 years old.
Interviewer	<i>Okay, what is your gender?</i>
Participant	I am a male.
Interviewer	<i>Do you live in South Africa and in which area?</i>
Participant	Yes, I live in South Africa. I live in Free State, Parys.
Interviewer	<i>Okay, and do you play games?</i>
Participant	Yes, I do.
Interviewer	<i>Okay. So, what type of games do you play?</i>
Participant	Um, I play a range of different games. I do like a lot of first-person shooter games. But I do enjoy MMO games as well.
Interviewer	And why is that?
Participant	It's just a different experiences and different communities, and different types of people I play with and things. It is very interesting, and different dynamics of the game as well.
Interviewer	<i>Okay. And how often would you say you play video games?</i>
Participant	Um... not as often I would like to, but I would say as of lately every two weeks I would play some games.
Interviewer	Is there any particular reason why is that or?
Participant	Yes, I just don't have the time anymore. I'm always on the road (<i>chuckles</i>).
Interviewer	<i>Okay, so what would you say VR games mostly draw your attention to?</i>

Participant	Um, just the realism factor and the excitement of what is going to be, to be honest. Um, not a huge fan where its right now, but I'm really excited for where it will in the future.
Interviewer	<i>Um, so what captures your attention before purchasing a VR game?</i>
Participant	Um, well... The price number one, and also its heavily dependent on the VR set that I have right now. But yeah, going forward it would just be the dynamics of the game, what I can or can't do and if other people agree what to do in the game.
Interviewer	<i>Um... What makes VR games stand out more than non-immersive games? So, um basically regular games.</i>
Participant	Um, I think the realism factor for me because if I get to hold a gun, and run around, and jump up and down. It would feel like I'm, I'm getting more out of the game than I would behind the keyboard and a mouse. So, um it's definitely the realism factor.
Interviewer	<i>Um, what elements urge you experience virtual reality?</i>
Participant	Um, the side from the realism that was definitely the um the new wave of gaming, the new way of technological gaming, I guess. Um... So, I definitely enjoyed the different aspects of it especially um the experiences I had, it showed me there was such a wide variety and things I couldn't expect. It, it was beyond my expectations already. So yeah!
Interviewer	<i>Um, another question is when using Virtual Reality to play games do you become aware of the events occurring in real world around you?</i>
Participant	Um, no (<i>laughs</i>) I get completely lost inside of the game. Um You can ask a mutual friend of mine, but I, I almost break everything

	around me <i>(laughs)</i> . So, yes, I completely get submerged to the game.
Interviewer	<i>Okay! Um how frequently do you find yourself closely identifying with the characters in the game?</i>
Participant	Um... Jeez... Um. It depends on the game really. Um, so, a lot of the time not frequently at all, but if I'm playing something that appeals to my nature then yes, quite frequently. I would say on average, average I would say frequently.
Interviewer	<i>Do you ever become so involved in the video game that you are basically inside of that VR game?</i>
Participant	Um yes, I have quite a sentimental personality. So, anything where, um, I have to create an entire portfolio or a profile for the character, I'm already invested in and already put my entire life into the game, and get easily depressed when it doesn't happen like that.
Interviewer	<i>Would you find inconsistent or a disconnect if the information comes from your various senses? So, like music, um does it actually play a big role and everything else, and not just the visuals.</i>
Participant	Yes. Everything plays a role for me. Definitely the music, definitely the graphic, definitely the prologue of the game, definitely the dynamics. Like for example if I can't peek around the corner or if I can't crouch properly or lay down, it ruins a lot of fun for me because I do like a lot of the real, realism.
Interviewer	Sorry, I'm just writing some notes. Um another question is <i>do you think virtual games can elicit an emotional response while playing a VR video game?</i>
Participant	Um, yes definitely. I do know that it has a huge psychological effect on people, and it could help with psychological issues as well as much it could help with normally emotional and mental issues. Um

	so, yeah! I think it could, I think, I think it really does have an effect either way.
Interviewer	<i>Does that have an effect on you?</i>
Participant	Yes! Yes, it does, absolutely.
Interviewer	<i>Okay! Um, in your opinion, how important is user experience development in general when you use VR?</i>
Participant	Um, definitely very important. Um. You know even outside of the VR, but concerning VR it is important because without user experience they are never gonna know how to really tailor it to everybody's needs and wants. So, I think it is quite important especially for me because you know, um, I do get quite attached to the game. So yes, it is important!
Interviewer	<i>Okay! In what way to you think user experience can influence your decisions?</i>
Participant	Um... Definitely on dynamic changes. If they change things to my experiences and to change things to my linking. And yeah! Um, if its more user friendly, the easier is to get into it, the better.
Interviewer	<i>How effective do you think user experience is to capture people attention?</i>
Participant	Um... very. (laughs) Ahh sorry! Very important, because if there is no user experience taken into an account, then everyone is going to look at the game like its um... I don't want to swear, but its piece of crap (swears)(laughs). So, yeah. It's definitely something that needs to be taken into a count, especially if you want to make sales and you want people to enjoy the experience and buying your products.
Interviewer	<i>Okay, cool. And my last question is do you find any limitations in virtual reality applications and devices?</i>

Participant	Yes, at the moment, I do. Would you like to hear it?
Interviewer	Yes! I would.
Participant	Okay, you are sitting down? <i>(laughs)</i>
Interviewer	Yeah! <i>(laughs)</i>
Participant	Okay! Um, for me the limitations right now are definitely um you know movement. So, if I put the VR headset on whatever, I can't run down the hallway - you know, with the VR headset on, because I might break some stuff. Um, so yes, I would like to see some cheaper and more extravagant features for VR, you know. Like maybe gloves so that your settings and sensitivity, and the feeling in the game is more real so that if I pick something up I don't have to press two buttons at the same time to walk, or <i>(laughs)</i> you know um. So, um, I would like to see more intuitive features.
Interviewer	So, it allows you to immerse yourself even on the higher level?
Participant	Yes, on the higher level. So, being able to walk in my room without walking into my PC screen and breaking that, hitting people in the face <i>(laughs)</i> you know. So, yeah. Things like that definitely make it more fun, but I do understand the limitations um that we have right now. And, um its expensive to make it. I, I'm very patient for it, but I know it's going to be great!
Interviewer	Yeah. Okay! That would be all, and I just want to thank you again your time and participation in this study.
Participant	Awesome! Thank you for... using me!

APPENDIX H: Coded interviews

Participant 1

Interviewer	<i>Alright, so what is your age?</i>	
Participant	I am 23.	
Interviewer	<i>And your gender?</i>	
Participant	Male.	
Interviewer	<i>Do you live in South Africa and in which area?</i>	
Participant	I do, and I live in Pretoria.	
Interviewer	<i>Do you play games?</i>	
Participant	(laughs) Often.	
Interviewer	(laughs) Okay. <i>What type of games do you play?</i>	
Participant	Um... pretty much anything. I love MMORPGs, FPS games, um... sometimes puzzle games as well if its intuitive enough. Umm so yeah, quite a bit of VR as well.	
Interviewer	<i>Okay. And how often would you say you play video games?</i>	Code: Value
Participant	Everyday! (laughs)	
Interviewer	(laughs) <i>Why that often?</i>	
Participant	Because it is an escape from reality and I um find it to be quite relaxing.	
Interviewer	<i>Okay, and why would you say VR games mostly draw your attention?</i>	

Participant	Well... For starters, the technology itself is really interesting to me. I'm really interested in a how technology works and such, to see it progress. Umm. Its also just a fact that I can immerse myself into an experience really. Um, it feels like I'm part of the game if that makes sense. I can role play, I'm very big on role play even in, in the game where role playing isn't really a thing. Um, for example, if you were to play VR um... I'm gonna call it football but it's actually a head-ball. Um, I treat myself as through I'm a sort of a sportsman, you know, and actually fit and handsome (laughs).	Code: Product attention
Interviewer	<i>(laughs) That's actually cool! What captures your attention before you purchase a VR game?</i>	
Participant	Um... Combination of things usually. Um, I, I'm usually made aware of the product by a -a trailer or a YouTuber playing a game for example for Beta or Alpha of the game. Um and if it seems like my sort of a game and I - I develop interest and I start doing research on it and then yeah. If it seems like my kind a thing, I will jump into to it.	
Interviewer	<i>Okay. In your opinion, what makes VR games stand out more than non-immersive games?</i>	
Participant	Um... So, it really comes down to the fact that it um you can really immerse yourself in VR. Um despite some of the limitations of this point in time. It's still quite easy to makes yourself believe that you are a part of a game due to the fact that you have two of your senses that work. Um so yeah. It really just comes down to the fact that is much easier to immerse yourself and um I really	

	enjoy being able to move around in real life and have the same actions mimicked within a virtual space.	
Interviewer	<i>Okay, so basically what elements than you would say that urge you experience virtual reality game?</i>	Code: Presence
Participant	Um. I would say the movement side of things is somewhat um restrictive but it's not – I don't know how to explain this. It's not restrictive in the sense that I can still move my hands, wave my hands around. For me that the important thing for me cause I really enjoy sword fighting for example in games like Skyrim VR, I can wave my sword around and slash and slice, cast a spell by using actual movements. It makes me, it's much more intriguing. Then just sitting down and playing on a controller or a keyboard and mouse. So... anything, my main element that I'm very interested in just in fact that I can move around and have my actions mimicked into a virtual space.	
Interviewer	<i>When using Virtual Reality when playing games do you become aware of the events occurring in real world around you?</i>	
Participant	Yeah. I-I-I'm still fairly aware um but that's only because of the fact that I am a very, very cautious person. So, I do try to be more aware of my surroundings and such just from the pure habit. Um, but let's say if I was in a very safe are and I could feel very relaxed and I had no items around me, no I would not be aware. 100 percent immersed if I had a very good area, um and a good surroundings stuff, knowing that - you know- nothing can happen whilst I'm in game. Yes, I can 100 percent immerse myself in the experience then.	

Interviewer	<i>Okay! Um how frequently do you find yourself closely identifying with the characters in the game?</i>	Code: Cognitive response
Participant	So, it really depends on the game. Um I can often find myself relating to the character. But I typically speaking, I'm more of a person who goes towards the games where I can create my own persona. Um, Skyrim VR is a good example of that so yeah.	
Interviewer	<i>Do you ever become so involved in the video game that you are basically inside of that VR game?</i>	
Participant	Yes, I do. Especially if I get very excited and um rather like I find it rather unjoyful than I can definitely sense myself in the game. Um and I mean to go back onto the Skyrim VR for example I love it a lot and there was another one Fire something. I can't remember the name... but it was a shooting game, FPS game. It was exciting, so it was very um suspenseful as well, so it would end up feeling a lot more immersed and like you are actually in this like counter terrorist sort of situation where you can take out the terrorists before um before they want to bomb or something. That I found very, very, very much enjoyable and I could definitely see myself in that game.	
Interviewer	<i>And would you find inconsistent or a disconnect if the information comes from your various senses?</i>	
Participant	Yeah, yeah. So, um, obviously there is obviously limitations of VR. So, the graphical side of things is troublesome. Um... It's very pixelated and that's just how it is. That should change within the next 2 years I would assume. So, um by then I don't think it would be as big of a problem as it's now. Um, to go back onto the	

	Skyrim VR for example if you play on the platform such as PlayStation 4 VR, the quality is much more crunched down than any other platform. So, it gets very blurry and it can make you very sick due to that. So... that was my only, the only game where I really had a lot of issue. Um, in terms of sound, the sound quality is really, really good as long as the development team, the sound designers and dev team do a good job. And um... yeah. I, I really think that's the main things is graphics because like yeah. I mean, innovation is also becoming a really big thing at VR and 3D space sound imaging those sort of things are becoming much more um much more of a big deal than it was. So, again within the next year or two, I expect that to be improved greatly as well even with a very weak sound design team.	
Interviewer	<i>So, would you then say virtual games can elicit an emotional response while playing a VR video game?</i>	Code: Emotional response
Participant	Yes, yes, yes of course. Um, I'm definitely a person who enjoys colours and sound. Um so typically that triggers an emotional response for myself. I get very sad, very happy, I can end up crying, you know. I mean in VR it's not great to cry, but (laughs). So yeah. If the story is also really good that's the one up. If you got story, colour and sound um... you can have one of the greatest and most beautiful experiences um that you would hope to have one day in real life (chuckles).	
Interviewer	<i>So, another question is in your opinion, how important is user experience development when it comes to virtual reality?</i>	
Participant	Yeah, user experience is very, very, very important in general. Um, I, I personally haven't had too much issues	

	with VR, again it really comes down to the developers to create a very friendly user experience. So, VR in general is very user friendly, it mostly comes down to developers, like the game studio behind certain games that need to make it more intuitive and make it more user friendly otherwise people do tend to umm...it tends to become overbearing and you lose interest much faster. I'm typically a person who figures things out by himself and tries very hard to figure things out, by just going through it, but I do know many people who get frustrated and they won't ever touch it again kind a thing. Yeah.	
Interviewer	<i>Okay, so in what way to you think user experience can actually influence your decisions when you are playing virtual reality game?</i>	
Participant	Um, it can greatly, like definitely, 100 percent greatly um influence the experience of a user. Um, if its not user friendly as I said in the past question. Typically, people they don't want to touch it. And even if they did, if it becomes too overbearing, they leave. They won't ever touch it again, they won't return, not without pressure. And you know obviously that's not a great thing to push someone into doing something that they don't want to do. So... yeah. In, in my experience I haven't had too many issues, but I can tell you that if it does get frustrating, I would rather avoid using it than you know. So, it is very, very important that is actually done very well, otherwise it's just a total waste of time. I think it's one of the main things that people should focus on before looking at um, sound design and those sort of things. You can a really great product but if the user interface or you know anything like that just mocks up	

	the user experience completely. SO yeah. In terms of graphics and stuff, those you can put aside. In terms of the functionality the intuitiveness you know those sort of things. Um, if you lack that, the user experience greatly degrades.	
Interviewer	<i>Yeah. Okay, another questions is how effective do you think user experience is to capture people attention?</i>	
Participant	I think, I think it's fairly important to capture people's attention. Um, I think when you have let's say a Twitch streamer for example or a YouTuber showcasing a game, you know, if they enjoy it so its obviously going to attract more people because more people are going to see and they gonna be like oh wow that looks fun. Um I want to that you know. So, that really applies to anything in general, but we can look at a game such as - I mean it's not quite a game- it's more of a social hub. But it's called VR chat, and many YouTubers just stream themselves - you know- just hanging in the VR chat, making jokes and things like that. And I found that a lot of people become interested in this, even introverts. They are like well I can actually be some like um I don't know, I can go as my favourite game into this VR chat and chat to these people and make jokes and have fun, you know without having to actually leave the comfort of my own home. So yeah, - you know- YouTubers, Twitch streamers those sort of things, um user experience definitely has an influence on how many people will come and flock towards you, especially in the age of reviews like on Steam where any person can just leave a review on a game. If you have a bad review, and a bad reputation, um anything below very positive is often	Code: Knowledge

	kind of disregarded. In my own, personal um... opinion. Um, so it's obviously not true to everybody. Some people will give games with a low score a chance, but I typically avoid them cause I feel as though if this person doesn't enjoy it there is a high chance that I probably not gonna enjoy it either. So, there is a very small chance that I will actually get involved.	
Interviewer	<i>Okay! And my last question is do you find any limitations in virtual reality applications and devices?</i>	
Participant	Limitations... Um... huh? (coughs). Um, being a person, I am researching a lot about new technology and things. Um, I don't believe there is much limitations as there was maybe 2 years ago. The constraints of cabling and things like that are slowly going away in favour of um streaming from your PC to your VR device itself because of 5 gigahertz lines for example. So, you can stream with minimal latency and um its literally from your computer to the VR headset. And you know, the range is obviously a whole different ball game that you can extend obviously all different things. So, it can have a completely wireless experience. Um... I... I'm not really too into the whole walking around simulation sort of a thing. I like the idea of being able to move, but I don't think it's necessary to have to walk in real life to a different area in VR which is already it's something that's kind of done. You can do minimal area – you know distance walking. Um, so yeah. I think, I don't really believe there is any real limitations considering that is also being used in architectural, um architectural companies and thing to collaborate with other architectural firms or other business and they invite	

	these people remotely to join into the session in VR and look at what the buildings look like and have meetings and things in VR. So, I don't think there is any limitations, in that regard. I think a lot of the time the limitations are just there as bottleneck so they can make profit of the next – you know – the next thing. Cause you don't really sell your best product from the get-go, because you have to come up with something even better and I that period of time you can lose a lot of money. So, its kind of like that whole bottleneck scenario where one person releases this, okay. Then they already got to plan for the next one, and release that. So, there is no real um limitations in that sense. I think there will definitely be a lot more coming out in the next 3 years again. Um, 8K VR is already a thing and it's been utilised in many high, high-high-high um ranking companies, so yeah.	
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Participant 2

Interviewer	<i>Okay, what is your age?</i>	
Participant	My age is 20 years old.	
Interviewer	<i>What is your gender?</i>	
Participant	My gender is male.	
Interviewer	<i>And, do you live in South Africa and in which area?</i>	
Participant	I live in Johannesburg, Boksburg.	
Interviewer	<i>Do you play games?</i>	
Participant	Yes, I do.	

Interviewer	<i>Okay. So, what type of games do you play?</i>	
Participant	I generally play first person shooter games, more battle royal and I also enjoy, adventure games, 3 rd person game. Um yeah.	
Interviewer	<i>And how often would you say you play video games?</i>	Code: Value
Participant	Everyday.	
Interviewer	And why is that?	
Participant	Because I live by myself. I don't have a family that I live with at the moment and it's a way to keep myself busy as I don't have really any form of entertainment other than a TV and it's also something I enjoy doing. Helps me pass the time and keep my brain active.	
Interviewer	<i>Okay! Why would you say VR games mostly draw your attention?</i>	Code: Product attention
Participant	The draw my attention mostly because of the potential they have but also it pulls me out of, out of the real world and puts me somewhere else where I can just enjoy the space that I'm in. And I um, don't need to worry, I don't need to worry about anything else that is happening around me. I can just be in my own space, enjoy it. Whatever is around me and what I can see in here and yeah. That's it.	
Interviewer	<i>Okay, so, what captures your attention before you purchase a VR game?</i>	
Participant	Um, what captures my attention is the firstly the type of the game it is and also the how you play it.	

Interviewer	<i>And in your opinion, what makes VR games stand out more than non-immersive games?</i>	
Participant	Well, it's the immersiveness of the game that stands out for me. It's the fact that you can go into the game, you can turn your head, you can look around, you use different mediums. Its just something different and much more immersive than what we are used to using, such as keyboard and mouse, and looking at the small screen. Here you feel the view is more wider, you don't need to turn the mouse to look around its just more enjoyable.	
Interviewer	<i>Okay, so what elements than you would say that urge you experience virtual reality game?</i>	
Participant	Just the fun side of it, the... yeah! Just... not having to worry about anything else type of thing (<i>chuckles</i>). I also just find It easier to, well not easier but its just a different way of moving around and different way of interacting with the game where you will actually have to actually move your arms and hands, and physically use the controller to pick up an object and move your arm to place it somewhere else, or interacting with a little person or a little robot or you are busy holding a gun and shooting something. Its... You are much more engaged in a game, you are not just moving a mouse and clicking a button.	Code: Presence
Interviewer	<i>When using Virtual Reality when playing games do you become aware of the events occurring in real world around you?</i>	

Participant	I do not because I cannot see the events in the real world me, and I cannot hear the events in the real world me. I am completely immersed in a game.	
Interviewer	<i>Okay! And how frequently do you find yourself closely identifying with the characters in the game?</i>	
Participant	Um... I feel its much more, much more common in the virtual reality game because when you are not in the virtual reality you are looking at the screen. Whereas when you are playing virtual reality games you feel like you are actually part of the game. You are in it, you are moving around, you are interacting with the game. You are not a third party sitting outside looking into it and just moving a character or something, you are actually a part of the game.	Code: Cognitive response
Interviewer	<i>Do you ever become so involved in the video game that you are inside of that VR game?</i>	
Participant	Yes! It does happen quite often as (laughs) - well its quite easy to explain as you are actually inside of the game. That was worded in my previous, in the previous answer. But you are interacting a lot more and yeah!	
Interviewer	<i>Would you find inconsistent or a disconnect if the information comes from your various senses?</i>	
Participant	If by that you mean more senses than sight and, and, um, basically sound. Those are the two main that you get. So, its much more difficult to emulate of a senses which is touch, smell, I mean we are not going to taste much in a VR game (laughs). It much more difficult to be simulating smells and touch, but if you could, it would make the game much, much more realistic. Feelings, so,	

	even like something like gloves or using soundwaves or that type of thing to actually give feedback to your, to your hands or something like that to... That would make it much, much more immersive.	
Interviewer	<i>Okay! And do you think virtual games can elicit an emotional response while playing a VR video game?</i>	
Participant	Yes definitely! As I said before, you are part of the game. It definitely can experience some emotions.	
Interviewer	<i>What emotions would you say you can um experience?</i>	
Participant	Well, it depends a lot on the game that you are playing. If you are playing a like let's say, like a first-person shooter game and you are in the tunnel busy fighting zombies, I mean you could maybe have fear, anxiety. Or if you are playing another fun, happy game you could feel happiness or that type of thing and I mean, yeah. If you are playing adventure games you can feel excited or you can feel to look forward to, meeting someone else or that type of thing.	Code: Emotional response
Interviewer	<i>Have you experienced any of those emotions?</i>	
Participant	I have! I have very recently played a game on PS4 VR where I experienced, I, I felt very happy playing the game as it was very colourful and like exciting environment that I was in. And I felt a lot of, I don't know what words to use but I think it was empathy for this cute little character that I was controlling (laughs).	
Interviewer	<i>(laughs) Okay! And in your opinion, how important is user experience development when looking at VR?</i>	

Participant	I think the user development experience is very, very important. Where VR is at the moment is impressive, but it has much, much more potential. For example, the resolution of the screen used in the VR headset, it can definitely be improved but with the improvement of that comes the, the requirement for more powerful um hardware to run the, to run the software that's required and all the extra details and everything. And... sound quality is there, they don't really need to worry to much about that but also, I think a big development that should be looked at, at least even if is primitive at the moment is um touch feedback. So, using gloves or um I've seen some concepts where they actually use soundwaves, concentrated soundwaves to actually make it feels as you have something in your hand. So, that is definitely something that does need to be developed. It is, I don't want to say primitive, but it has a lot more potential than where is at the moment.	
Interviewer	<i>Okay. In what way to you think user experience can influence your decisions in the VR game?</i>	
Participant	Well. I mean, if you take it even further then just being able to touch things. If you have um something like pen added into it (<i>chuckles</i>) it would definitely influence your decisions. Like, lets say for example your character needs to jump off something and then if you could experience that pain, you would definitely think twice about doing it or think twice about being attacked by something, you would be much more cautious. Whereas with something else you might not be when you are lacking those sort of thing.	

Interviewer	<i>So, how effective do you think user experience is to capture people attention?</i>	
Participant	Well I think, I haven't heard of many, many places where you can professionally be taught how to use VR and working with the development VR. So, there much more applications that it can be useful that is not. I am aware that um some applications as a good example in architecture now. When you go do architecture at Technicon, you actually learn how to design houses using like in 3D and you can do a tour of your house, your virtual house with the VR headset. So, that's one application that I know of and the possibility are so much lack of it that I haven't actually seen in South Africa. I don't know if that's because of lack of funding or because there is actually a lack of people that know how to do it. Yeah! There is a lot of room for improvement. There is a lot.	
Interviewer	<i>So, my last question is do you find any limitations in virtual reality applications and devices?</i>	
Participant	So... Well basically in a headset itself I know there are limitations. It's like I said earlier (chuckles) the resolution of the screens that are used. Um you need more powerful hardware to run high resolution screens as there a two screens in a headset.	
Interviewer	<i>Would you say that would affect your attitude towards VR?</i>	
Participant	Yes definitely. If, if, if the devices were further, more advanced then where they were at the moment. I mean at the moment it does feel still where we are in the begging stages of VR. It's still something we are getting	

	used to. If it was much more advanced and stuff like that and if I had money to spend a lot on the whole setup, I would. But at the moment, spending a lot of money on the setup like that at the point where we are there is a lot more room for improvement. It can get much better, but we just need to work on it. If, if for example they looked more realistic and those sort of things, I would definitely go and buy it. It would appeal to me much more than it does at the moment. Not that it doesn't appeal to me now. I'm very excited about VR, I really like it, but there is just so much potential that isn't there at the moment.	
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Participant 3

Interviewer	<i>Okay, so what is your age?</i>	
Participant	My age, I am 25 years old.	
Interviewer	<i>Okay, what is your gender?</i>	
Participant	I am a male.	
Interviewer	<i>Do you live in South Africa and in which area?</i>	
Participant	Yes, I live in South Africa. I live in Free State, Parys.	
Interviewer	<i>Okay, and do you play games?</i>	
Participant	Yes, I do.	
Interviewer	<i>Okay. So, what type of games do you play?</i>	
Participant	Um, I play a range of different games. I do like a lot of first-person shooter games. But I do enjoy MMO games as well.	

Interviewer	And why is that?	
Participant	It's just a different experiences and different communities, and different types of people I play with and things. It is very interesting, and different dynamics of the game as well.	
Interviewer	<i>Okay. And how often would you say you play video games?</i>	Code: Value
Participant	Um... not as often I would like to, but I would say as of lately every two weeks I would play some games.	
Interviewer	Is there any particular reason why is that or?	
Participant	Yes, I just don't have the time anymore. I'm always on the road (chuckles).	
Interviewer	<i>Okay, so what would you say VR games mostly draw your attention to?</i>	Code: Product attention
Participant	Um, just the realism factor and the excitement of what is going to be, to be honest. Um, not a huge fan where its right now, but I'm really excited for where it will in the future.	
Interviewer	<i>Um, so what captures your attention before purchasing a VR game?</i>	
Participant	Um, well... The price number one, and also its heavily dependent on the VR set that I have right now. But yeah, going forward it would just be the dynamics of the game, what I can or can't do and if other people agree what to do in the game.	

Interviewer	<i>Um... What makes VR games stand out more than non-immersive games? So, um basically regular games.</i>	
Participant	Um, I think the realism factor for me because if I get to hold a gun, and run around, and jump up and down. It would feel like I'm, I'm getting more out of the game than I would behind the keyboard and a mouse. So, um it's definitely the realism factor.	
Interviewer	<i>Um, what elements urge you experience virtual reality?</i>	Code: Presence
Participant	Um, the side from the realism that was definitely the um the new wave of gaming, the new way of technological gaming, I guess. Um... So, I definitely enjoyed the different aspects of it especially um the experiences I had, it showed me there was such a wide variety and things I couldn't expect. It, it was beyond my expectations already. So yeah!	
Interviewer	<i>Um, another question is when using Virtual Reality to play games do you become aware of the events occurring in real world around you?</i>	
Participant	Um, no (laughs) I get completely lost inside of the game. Um You can ask a mutual friend of mine, but I, I almost break everything around me (laughs). So, yes, I completely get submerged to the game.	
Interviewer	<i>Okay! Um how frequently do you find yourself closely identifying with the characters in the game?</i>	Code:
Participant	Um... Jeez... Um. It depends on the game really. Um, so, a lot of the time not frequently at all, but if I'm playing	

	something that appeals to my nature then yes, quite frequently. I would say on average, average I would say frequently.	Cognitive response
Interviewer	<i>Do you ever become so involved in the video game that you are basically inside of that VR game?</i>	
Participant	Um yes, I have quite a sentimental personality. So, anything where, um, I have to create an entire portfolio or a profile for the character, I'm already invested in and already put my entire life into the game, and get easily depressed when it doesn't happen like that.	
Interviewer	<i>Would you find inconsistent or a disconnect if the information comes from your various senses? So, like music, um does it actually play a big role and everything else, and not just the visuals.</i>	
Participant	Yes. Everything plays a role for me. Definitely the music, definitely the graphic, definitely the prologue of the game, definitely the dynamics. Like for example if I can't peek around the corner or if I can't crouch properly or lay down, it ruins a lot of fun for me because I do like a lot of the real, realism.	
Interviewer	Sorry, I'm just writing some notes. Um another question is <i>do you think virtual games can elicit an emotional response while playing a VR video game?</i>	
Participant	Um, yes definitely. I do know that it has a huge psychological effect on people, and it could help with psychological issues as well as much it could help with normally emotional and mental issues. Um so, yeah! I think it could, I think, I think it really does have an effect either way.	Code: Emotional response

Interviewer	<i>Does that have an effect on you?</i>	
Participant	Yes! Yes, it does, absolutely.	
Interviewer	<i>Okay! Um, in your opinion, how important is user experience development in general when you use VR?</i>	
Participant	Um, definitely very important. Um. You know even outside of the VR, but concerning VR it is important because without user experience they are never gonna know how to really tailor it to everybody's needs and wants. So, I think it is quite important especially for me because you know, um, I do get quite attached to the game. So yes, it is important!	
Interviewer	<i>Okay! In what way to you think user experience can influence your decisions?</i>	
Participant	Um... Definitely on dynamic changes. If they change things to my experiences and to change things to my linking. And yeah! Um, if its more user friendly, the easier is to get into it, the better.	
Interviewer	<i>How effective do you think user experience is to capture people attention?</i>	
Participant	Um... very. (laughs) Ahh sorry! Very important, because if there is no user experience taken into an account, then everyone is going to look at the game like its um... I don't want to swear, but its piece of crap (swears)(laughs). So, yeah. It's definitely something that needs to be taken into a count, especially if you want to make sales and you want people to enjoy the experience and buying your products.	Code: Knowledge

Interviewer	<i>Okay, cool. And my last question is do you find any limitations in virtual reality applications and devices?</i>	
Participant	Yes, at the moment, I do. Would you like to hear it?	
Interviewer	Yes! I would.	
Participant	Okay, you are sitting down? <i>(laughs)</i>	
Interviewer	Yeah! <i>(laughs)</i>	
Participant	Okay! Um, for me the limitations right now are definitely um you know movement. So, if I put the VR headset on whatever, I can't run down the hallway - you know, with the VR headset on, because I might break some stuff. Um, so yes, I would like to see some cheaper and more extravagant features for VR, you know. Like maybe gloves so that your settings and sensitivity, and the feeling in the game is more real so that if I pick something up I don't have to press two buttons at the same time to walk, or <i>(laughs)</i> you know um. So, um, I would like to see more intuitive features.	
Interviewer	So, it allows you to immerse yourself even on the higher level?	
Participant	Yes, on the higher level. So, being able to walk in my room without walking into my PC screen and breaking that, hitting people in the face <i>(laughs)</i> you know. So, yeah. Things like that definitely make it more fun, but I do understand the limitations um that we have right now. And, um its expensive to make it. I, I'm very patient for it, but I know it's going to be great!	

APPENDIX I: Report summary document table

Annexure I: Final Research Report Summary Document Template

PROVISIONAL TITLE: Analysis in how user experience influences consumer attitude towards VR as a communication medium

Research Purpose/Objective	Primary Research Question	Research Rationale	Seminal Authors/Sources	Literature Review – Conceptual Framework	Paradigm	Approach	Data Collection Method(s)	Ethics	Anticipated Findings	References
To utilise an interpretivist empirical paradigm to provide the reader and other researchers with an in-depth comprehension in how user experience influences South African Generation Z's consumer attitude towards virtual reality as a communication medium.	Why does user experience influences South African consumer attitude towards virtual reality in the gaming industry?	The topic was selected to explore the interdisciplinary field of design, computer science, media and communication. Researchers are required to stay relevant to demonstrate cutting-edge technology and projection of VR within communication fields, especially Strategic Brand Communication. As a cross-sectional study, this research assists South African brands and communication experts to gain insight into the positive attitudes towards cutting edge technologies.	Biocca, F. 1992; Biocca, F., & Delaney, B. 1995; Barnes, 2016; Norman, 2004	Theme 1: Theoretical Framework Theme 2: Literature review - Virtual Reality as a Communication Medium - User Experience Communications - Consumer Attitude	Paradigm Interpretivist empirical paradigm Epistemology seeks to understand human behaviour and people's views on matters to gather essential information required to challenge the objective truths (Du Plooy-Cilliers et al, 2014:28). Ontology is subjectively constructed based on people's perceptions of their experiences and interactions within their social environment (Raddon, [s.a]:6). Methodology serves as a guiding system to solve the proposed problem. To gain a deeper understanding will depend on qualitative research (Ladyman, 2007:303) as it assists the researcher in instructing and communicating with participants.	Qualitative to gain an subjective insight into specific behaviours experienced. Population Population Parameters South African citizens, who have interest in playing games on PC or console.	Cross-sectional study. In-depth interviews - semi-structured, open ended discussion through Discord. Sessions were recorded and transcribed.	Obtained the consent form from the respondents. Consent was purely on the voluntary bases. The researcher worked ethically and avoided bias to ensure that the results display the true answers or the participants. Ensured that Vega's ethics were maintained throughout the study and study was of the highest academic standard set by the IIE.	The researcher provides an understanding of South African perspective towards VR which are beneficial for marketers and brands going forwards in which they will be able to demonstrate cutting-edge to reach their consumers.	Riva. G., 1999. Virtual reality as communication tool: a socio-cognitive analysis, Presence: Teleoperators and Virtual Environments, 8(4):462-468. [Online]. Available at: https://www.researchgate.net/publication/220089843_Virtual_Reality_As_Communication_Tool_A_Socio-Cognitive_Analysis [Accessed 11 March 2020].
Research Problem	Secondary Questions/Objectives	Key Concepts	Key Theories			Sampling	Data Analysis Method(s)	Limitations	Anticipated Contribution	
Marketers and influential brands have raised concerns regarding immersive technology's favourable presence in first world countries (Barnes, 2016:3). However, South Africa has showcased opposition to espouse these innovative technologies	RQ1: Does user experience play a role in one's attitude towards VR technology? RQ2: Why innovations such as Virtual Reality could prompt behavioural changes within South Africa's Generation Z? RQ3: Would one encounter attitude towards virtual reality following their gaming experience? O1: To explore does user experience plays a role in one's attitude towards virtual reality in the gaming industry. O2: To discuss if Generation Z's would encounter positive consumer attitude towards Virtual Reality following their gaming experience? O3: To describe why innovations such as Virtual Reality could prompt behavioural changes within South Africa's Generation Z.	Consumer attitude; User Experience; Virtual Reality	Attitude theory -provides four classifications. For the purpose of this study Behavioursitic/Learning Theory will be used.			Non-probability Sampling method Convenience Size In-depth interview	Unit of Analysis Male South African residents, had an interest in playing games on PC or console, and are part of Generation Z. Data Analysis Method(s) Inductive content analysis. Thematic coding - use of themes derived from literature review.	Cross sectional study. Time frame for the research - not able to go into as much depth to obtain the findings. Not able to conduct research across the whole of South Africa. Small group of Generation Z who can participate - sample not representative. Participants were not to participate due to COVID-19. Feasibility of the study.	The researcher provides South African perspective towards VR which would be beneficial for marketers and brands going forwards in which they will be able to demonstrate cutting-edge to reach their consumers.	communication – the impact on the message, technology and offer perception – empirical study. Economics and Business Review, 4(18):36-50. [Online]. DOI: 10.18559/ebr.2018.3.4 [Accessed 11 March 2020]. Rubio-Tamayo, J., Gertrudix Barrio, M. and García García, F. 2017. Immersive Environments and Virtual Reality: Systematic Review and Advances in Communication. Interaction and Simulation. Multimodal Technologies and Interaction, 1(4):1-20. [Online]. Available at: https://www.mdpi.com/2414-4088/1/4/21 [Accessed 11 March 2020].